Ray Bobillo

DIVISION OF APPLIED TECHNOLOGY AND DEPARTMENT OF INDUSTRIAL EDUCATION

1964-1965

PURDUE UNIVERSITY BULLETIN

UNIVERSITY CALENDAR

1964

SEPTEMBER

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First Semester

September 16
Classes begin
November 25
Thanksgiving vacation begins
November 30
Classes resume
December 19
Christmas vacation begins
January 4
Classes resume
January 23
Classes end

1965

JANUARY

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JUNE

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JULY

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AUGUST

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Second Semester

February 1
Classes begin
March 27
Spring vacation begins
April 5
Classes resume
June 2
Classes end
June 6
Commencement

Summer Sessions, 1965

June 21-August 13
Regular 8-Weeks Session
July 5
Independence Day Holiday
June 14-July 2
First Intensive Session
July 6-23
Second Intensive Session
July 26-August 13
Third Intensive Session

Cover design by J. H. Boyer, student in Industrial Illustration Technology

PURDUE UNIVERSITY BULLETIN

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Division of Applied Technology and Department of Industrial Education Announcements for the Year 1964-65

PURDUE UNIVERSITY

Calumet Campus

Indiana-Purdue
Regional Campus
at Fort Wayne

Indianapolis Campus

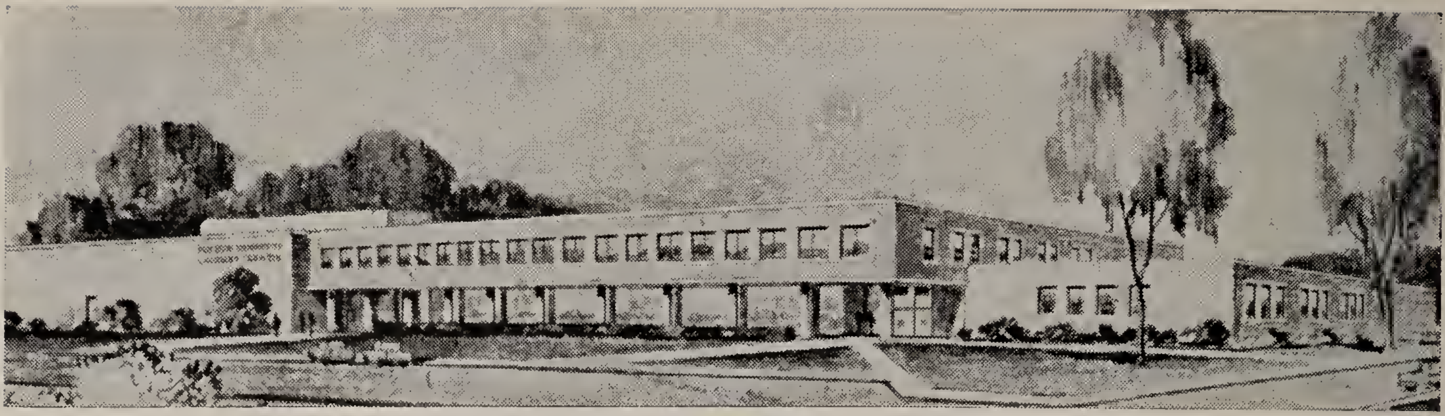
Lafayette Campus

Barker Memorial Center

Ninetieth Year

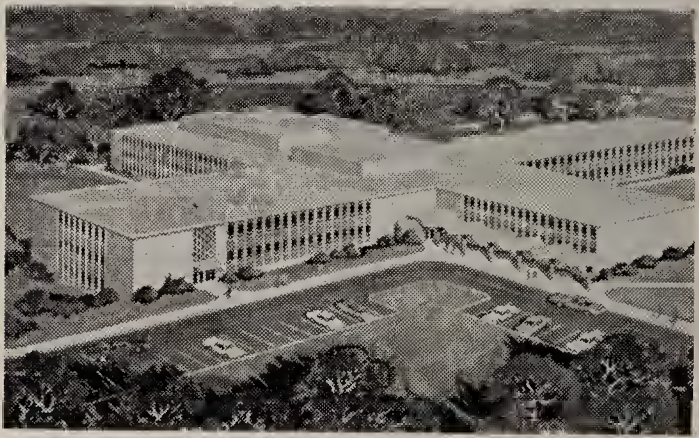
LAFAYETTE, INDIANA

PUBLISHED BY THE UNIVERSITY

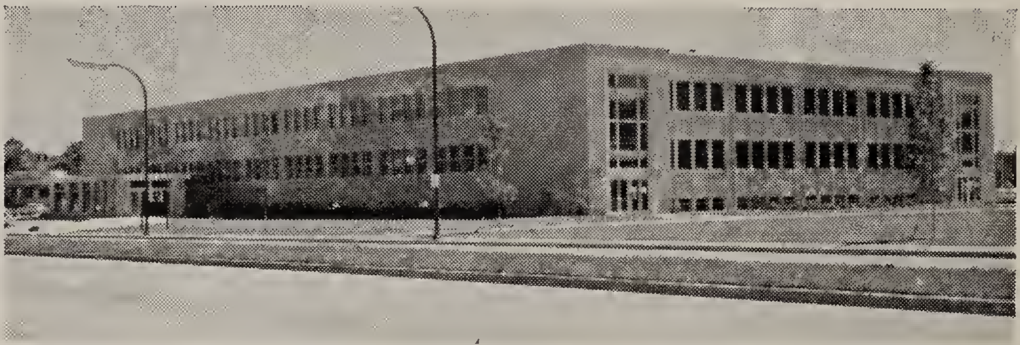


Purdue Calumet Campus at Hammond

Purdue Barker Memorial Center at Michigan City



Indiana-Purdue Campus at Fort Wayne



Krannert Building on the Purdue Indianapolis Campus

Purdue University Airport

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ANNOUNCEMENT

Historically, this has been the catalog of the Division of Applied Technology (previously the Division of Technical Institutes). However, this current issue also includes announcements for the Department of Industrial Education for the year 1964-1965.

On June 2, 1963, the Board of Trustees of Purdue University, acting upon the recommendation of the president of the University, separated the industrial education component from the Department of Education, created the Department of Industrial Education, and located it administratively within the University Extension Administration for a period of one year. These actions were taken by the Board in anticipation of the creation of a new school within the University, effective July 1, 1964.

This catalog is consequently an interim catalog. Because catalog copy is of necessity prepared several months in advance of publication the catalog will serve the new school during its first year of operation. As the catalog goes to press a faculty committee is functioning to plan the new school and to recommend to the president and Board of Trustees an appropriate name.

PURDUE UNIVERSITY
Division of Applied Technology and Department of Industrial Education

ADMINISTRATIVE OFFICERS

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H. R. Johnson, M.S.	Chairman, Nursing Section
J. R. Maris, B.S.	Head, Department of Aviation Technology
G. W. McNelly, Ph.D.	Director, Division of Applied Technology; Acting Head, Department of General and Applied Studies
L. O. Nelson, Ph.D.	Director, Division of Conferences and Continuation Services
N. M. Parkhurst, M.S.	Registrar
H. C. Rountree, B.S.	Head, Department of Engineering Technology
C. L. Darby, Ph.D.	Assistant to the Dean
D. A. Scott, Ph.D.	Associate Dean of University Extension
H. W. White, M.S.	Director of Admissions
R. B. Wilson, Ph.D.	Cooperative Extension Coordinator

CALUMET CAMPUS ADMINISTRATIVE STAFF (HAMMOND)

C. H. Elliott, Ph.D.	Director
R. J. Combs, A.M.	Assistant Director
W. M. Tackett, Ed.D.	Admissions Officer
L. M. Crawford, M.S.	Registration Officer
H. H. Hubbard, M.A.	Student Affairs and Guidance Officer

FORT WAYNE CAMPUS ADMINISTRATIVE STAFF

R. L. Ewigleben, Ed.D.	Director
D. R. Smith, Ph.D.	Assistant Director
J. D. Hostetter, M.A.	Admissions Officer
N. T. Cooper, M.A.	Registration Officer

INDIANAPOLIS CAMPUS ADMINISTRATIVE STAFF

J. M. Ryder, Ph.D.	Director
G. C. Fox, M.S.	Admissions Officer, Student Affairs and Guidance Officer
W. E. Hanshew, M.S.	Registration Officer

BARKER MEMORIAL CENTER (MICHIGAN CITY) ADMINISTRATIVE STAFF

R. F. Schwarz, M.S.	Director
R. E. Wilson, Ed.D.	Assistant Director

THE DIVISION OF APPLIED TECHNOLOGY

Organization and Purpose

The Division of Applied Technology is a division of the University Extension Administration. It is charged with the responsibility for college-level courses and curricula of an applied science nature. In addition, it offers numerous special service courses and programs for adults who are pursuing a specific professional objective. The division has responsibility for all undergraduate curricula leading to the degree of Associate in Applied Science. The University Extension Council is the faculty body that exercises academic control over these courses and curricula.

The division, though its name has been changed, has been in existence since 1943. It functions through three academic departments, the Department of Aviation Technology, the Department of Engineering Technology, and the Department of Applied and General Studies, and the Nursing Section. Though its activities take place both on and off the campus, the majority of its offerings at the present time are at the three regional campuses and a University center.

The Nature of Applied Technology

Scientific and technological complexity ranges over a very broad spectrum, extending all the way from extremely simple activity to highly complex and abstract activity. At one extreme is the pure scientist and the engineering scientist; at the other end is the mechanic and the craftsman.

The Engineer. A professional engineer's work is mostly mental in character. He studies and reasons and visualizes how new bits of knowledge may be put to practical use. The vast majority of engineers do not need manual dexterity with tools. Among the activities they engage in are design of tools, structures, mechanisms, circuits, or processes; the layout of industrial plants; the planning of industrial processes; research and development; administrative duties in production; sales planning and development; controlling the quality of manufactured products through testing and inspection; and planning systems for the distribution of power and for electronic communications.

The Engineering Technician. An engineering technician engages in work that requires some of the knowledge and skills of both the professional engineer and the skilled craftsman. He is required to know basic theories and to apply them in helping to solve the complex problems of modern industry. In this way the engineering technician carries out vitally important assignments and takes his place on the engineering team.

The engineering technician usually specializes in one aspect of engineering. He might, for example, work as a draftsman, a detail designer, a cost estimator, a production supervisor, a research assistant, a quality-control supervisor, a time-study man, an expediter, a technical salesman, or a production planner.

The Skilled Craftsman. The work of the engineer and the technician would be meaningless without the contribution of the skilled craftsman who carries out engineering ideas. A toolmaker, for example, fabricates a jig or die from a design conceived by the engineer and detailed by the technician. The electrician, pipefitter, welder, machinist, chemical operator, and surveyor's rodman likewise use their skills to carry out the work of the engineering team.

The Engineering Technician

Definition. A committee of the American Society for Engineering Education utilized the following definition in their report entitled "Characteristics of Excellence in Engineering Technology Education."

"An engineering technician is one whose education and experience qualify him to work in the field of engineering technology. He differs from a craftsman in his knowledge of scientific and engineering theory and methods and from an engineer in his more specialized background and in his use of technical skills in support of engineering activities."

The National Committee for the Development of Scientists and Engineers, appointed by President Eisenhower in 1956, has adopted the following description of duties performed by an engineering technician, " . . . the engineering or scientific technician is usually employed in (1) research, design, or development; (2) production, operation, or control; (3) installation, maintenance, or sales. When serving in the first of these functional categories, he usually acts as direct supporting personnel to an engineer or scientist. When employed in the second category, he usually follows a course prescribed by a scientist or engineer but may not work closely under his direction. When active in the third category, he is frequently performing a task that would otherwise have to be done by an engineer.

"In executing his function the scientific or engineering technician is required to use a high degree of rational thinking, and to employ post-secondary school mathematics and the principles of physical and natural science. He thereby assumes the more routine engineering functions necessary in the growing technologically based economy. He must effectively communicate scientific or engineering ideas mathematically, graphically and linquistically."

Need. Our present space age, with its exploding accumulation of new information and scientific discovery, has increased the need for people with specialized training in science and technology. Experts have recently estimated that our nation's engineering schools must graduate twice the present 35,000 engineers per year if we are to meet the expanding needs.

Since it now appears improbable that our nation will be able to attain the goal of 70,000 to 80,000 engineers per year another approach to the problem is necessary. The most reasonable solution appears to be one of making the present professional engineer more efficient by providing him with assistance in the form of an engineering technician. Many experts believe that there should be a ratio of from three to five engineering technicians for each engineer. This would indicate that 100,000 to 150,000 engineering technicians should be trained per year.

Currently the United States has only about 16,000 graduates of engineering technology programs coming on the job market each year. This simply means there is a large, unsatisfied demand for engineering technicians. The opportunities in this field are virtually unlimited.

APPLIED TECHNOLOGY CURRICULA

Applied technology curricula are college-level programs that specialize in the education of technicians.

Curricula in this field are offered by a variety of institutions, and cover a considerable range as to duration and content of subject matter, but have in common the following purposes and characteristics:

(1) The purpose is to prepare individuals for various technical positions or lines of activity encompassed within the field of engineering, but the scope of the programs is more limited than that required to prepare a person for a career as a professional engineer.

(2) Programs of instruction are essentially technological in nature, based upon principles of science and include sufficient post-secondary school mathematics to provide the tools to accomplish the technical objectives of the curricula.

(3) Emphasis is placed upon the use of rational processes in the principal fundamental portions of the curricula that fulfill the stated objectives and purposes.

(4) Programs of instruction are briefer and usually more completely technical in content than professional curricula, though they are concerned with the same general fields of industry and engineering. They do not lead to the baccalaureate degree in engineering.

(5) Training for artisanship is not included within the scope of education of technical institute type.

(6) The Division of Applied Technology also offers a program at the Lafayette campus in nursing. The graduates of this program are eligible to take the State Board Examination to obtain the registered nurse certificate (R.N.).

Developed With Industrial Cooperation

Various courses are offered to cover the basic knowledge and practices of present-day industry. Industrial leaders have been consulted to learn the kind of specific technical information required by persons who take jobs in industry. Many members of the instructional staff are drawn from local industries, but course administration, teaching material, and standards of instruction are under the direction of Purdue University.

Located at Purdue University Campuses and Centers

In general, the curricula are offered only at the Purdue University regional campuses and centers—close to the needs of industry and their industrial employees. (The aviation and nursing programs are offered on the Lafayette campus.) Classes are usually offered for full- or part-time students in day or evening sessions.

Programs

The applied technology programs consist of:

1. *Day programs.* These programs are primarily for students with little or no industrial experience—directly out of high school or military service.

They are of two years' duration and lead to the degree of Associate in Applied Science in the curriculum studied. Students admitted to these programs are classified as regular students. See entrance requirements on page 11.

2. *Evening programs.* These programs are planned to serve industrial employees or others who, because of many reasons, cannot attend day school programs. These include:
   (a) *Programs* in the selected fields of technology which lead to the degree of Associate in Applied Science. Students admitted to these programs are classified as regular evening school students. See entrance requirements on page 11.
   (b) *Certificate programs* have been designed for the more mature adult either in industrial employment already, or desiring technical industrial employment. They are designed to be as concentrated and immediately practical as possible for students who have limited time or funds available for formal education. Students admitted to this program are classified as temporary students but upon completion of an approved program may continue in the two-year associate degree program providing:
      (1) The student qualifies for reclassification as a regular student.
      (2) Not more than 12 credit hours taken as a temporary student are counted toward his degree.

Highway technicians practice laying out horizontal circular curves.

   (c) *Special service programs.* The Division of Applied Technology cooperates with individual industries or communities in the development and operation of specialized training programs. Such service is rendered without charges other than the regular fees assessed for student enrollment in classes. Since such highly specialized service courses are usually restricted to a single location and serve a special need, they are not completely described in this catalog and may differ to some extent in fees, advanced standing provisions, and other details from the general fields of study described in this catalog. Students admitted to this program are classified as temporary students but upon completion of an approved program may continue in the two-year associate degree program providing the student qualifies for reclassification as a regular student. Not more than 12 credit hours taken as a temporary student may be counted toward his diploma.

STUDENT INFORMATION

Admission

Students may be admitted to the Division of Applied Technology as (1) *regular students* or (2) *temporary students.* A regular student, upon satisfactory completion of a prescribed curriculum, may be awarded the degree of Associate in Applied Science. *Temporary students* are not eligible for the award of this degree.

Admission as a Regular Student. A student to be admitted to the University as a regular student must be a high school graduate and must present 15 units of secondary school work. The prescribed units must be distributed as follows:

English	3 units
History or social studies	1 unit
Algebra	1 unit
Plane geometry	1 unit
Laboratory science—preferably physics or chemistry	1 unit
Additional English, language, mathematics, science, or social science	3 units
Other high school subjects	5 units
Total	15 units

The above distribution of high school units should be considered as minimum requirements. Preference will be given to applicants who have had four units of English, advanced algebra, trigonometry, and both physical sciences.

A student meeting the above requirements except for plane geometry may be given provisional admission as a regular student for one semester only, with assignment to a noncredit course in plane geometry. A student provisionally admitted will be allowed to take a limited number of specified courses. To be eligible to continue he must remove his geometry deficiency and make a satisfactory record in other courses taken.

All applicants must take the College Board Scholastic Aptitude Test (SAT) and the College Board achievement tests in English, intermediate mathematics, and chemistry. These examinations are given several times annually at more than 100 locations in the state. See your high school counselor or consult the admissions officer at your nearest Purdue campus.

Applicants who rank in the lowest third of their graduating class are not eligible for admission unless they do exceptionally well on their College Board test.

Admission as a Temporary Student. A student may be admitted as a temporary student for one semester to take one or more specific courses for which he is qualified. At the time of his admission it is not anticipated that he will pursue an associate degree program of study. He may be readmitted in subsequent semesters, also as a temporary student if the quality of his work is satisfactory. However, in the event that he should subsequently be admitted as a regular student to work toward the associate degree, not more than 12 semester hours of work taken as a temporary student may be applied toward meeting the requirements of the degree.

Predegree Students. Predegree students are of two general classes: (a) those who wish to prepare themselves for later admission to one of the University's baccalaureate or associate degree programs; (b) those who do not intend to seek admission to a degree program but who wish to satisfy a specific vocational or other personal need by pursuing one of the University's certificate programs.

Advanced Standing. Applicants may be admitted with advanced standing:

1. By transfer of credits from other accredited technical institutes or colleges or universities.
2. By passing special examinations in certain courses.

Advanced standing, where granted, is stated in terms of the specific courses in which credit is allowed. Any student desiring advanced standing should make application in time for such credit to be approved before enrolling in other courses. The applicant for advanced standing will be given a statement in writing concerning the action taken on his request.

Nonresident Students. Indiana residents are given preference when enrollment is limited or classes are crowded.

Permission to Register. The student should note that permission to register depends first of all upon being admitted to Purdue University.

The University reserves the right to determine the beginning level of any student whether it involves placement at an advanced or deficiency level in any subject field.

Procedure for Making Application. An application for admission must be made upon a form obtainable from the Office of Admissions, Purdue University, Lafayette, Indiana, or from the admissions office of one of the Purdue University regional campuses or centers.

Such applications will require a transcript of the high school record and of college-level work taken at other colleges or universities even though transfer credit may not be desired. Students transferring from another curriculum of Purdue need not supply transcripts since all Purdue records are available. The applications should be entered as far ahead of the opening date of school as possible. A high school student should normally apply during his last semester as a senior.

The admissions officer will make a report to the applicant regarding the action taken upon the application.

Student Classification

Regular Students. Regular students are students who have met the admissions requirements and are pursuing an approved plan of study leading to an associate degree. Regular students may be enrolled on either a part-time or full-time basis—in day or evening classes.

Temporary Students. These are students who desire to receive the instruction without undertaking one of the regular plans of study leading to the associate degree. Such students must present satisfactory evidence that they are qualified to receive instruction at the level of the courses desired and have the appropriate background, language skills, etc.

Student Loads. Students are not permitted to enroll for more than 20 semester hours of credit in any semester—unless by special permission. Working students should reduce their loads in proportion to their working time. For students working full time an average of six semester hours is considered normal and no more than eight semester hours may be taken without approval.

Plan of Study. Each student working toward the associate degree or certificate should have a plan of study for the desired program, which must be approved by a counselor at each registration. No minimum length of time is prescribed for students to complete their work toward an associate degree or certificate. The semester hours of credit for each student are permanently recorded in the Office of the Registrar of the University; these credits are cumulative toward an associate degree or certificate regardless of whether the student is continuously enrolled in successive semesters or whether all the work is taken at one center.

University Fees

Since catalog copy is, of necessity, prepared several months in advance, fees are subject to change by the Board of Trustees without notice.

Fees and deposits for the programs included in this catalog follow.

All fees are payable at time of registration each semester.

Programs Offered at Lafayette Campus

1. The fees for the curricula in Industrial Illustration Technology, Aviation Maintenance Technology, Aviation Electronics Technology, Professional Pilot Technology, and Nursing are:

	Each Semester
General service fee	$108.00
Tuition fee, for students from outside the state	310.00
Medical and infirmary fee	19.50
Student activity fee (Purdue Memorial Union, Edward C. Elliott Hall of Music, and University Convocations)	25.50
Recreation facilities fee (including admission to home athletic contests, locker in gymnasium, towels, etc.)	12.00
TOTAL FEES FOR RESIDENT STUDENT	165.00
TOTAL FEES AND TUITION FOR STUDENTS FROM OUTSIDE THE STATE	475.00

2. Fees for the credit flight and support courses are established as follows:
   a. Flight enrollment fee—$150.
   b. Flight continuation fee—$275 with an additional $125 continuation fee for the instrument course.
   c. All three-hour ground school support courses are charged at the established rate of $15 per semester hour.
   d. There will be no refund provision.
3. Fees for noncredit personal service courses vary for each course.

Programs Offered at the University Centers

4. Curricula in Engineering Technology (courses numbered from 100 to 400)—$15 per credit hour plus $4 per laboratory hour.

   Example: (a) BC 164—Building Materials. Class 3, cr. 3.—3 x 15=$45.
   (b) DM 264—Machine Design II. Class 1, Lab. 6, cr. 3—(3 x 15) + (6 x 4)=$69.

5. (a) Specialized Services Courses (courses numbered under 100)—Fees for each course are listed with the course descriptions in this catalog.
   (b) Practical Nursing Program—
   Fees for first 16 weeks of classroom and laboratory instruction at Calumet Campus—$175.
   Courses scheduled during the four 2-week periods of each of the four cooperating hospitals are individually priced and listed along with the course descriptions.

Breakage Fees. Course fees include the cost of normal breakage and wear and tear on equipment. An additional charge will be levied against individuals for excessive waste, loss, or breakage that may occur. Such special charges must be paid before course credit will be given.

Activity Fees

12 semester hours or more $3 (effective all Centers).
8-11 semester hours $2 (effective Calumet and Fort Wayne).
1-7 semester hours $1 (effective Calumet and Fort Wayne).

Late Registration Fees

$2 per course during first week of classes, with a maximum of $10.
$3 per course during second week of classes, with a maximum of $15.
A minimum of $5 always to apply.

Diploma Fee. Students in applied technology must pay a diploma fee of $5 not less than 30 days before the close of the semester in which they expect to complete their work for an associate degree.

Special Examination Fees. By any student taking an examination to remove a condition—per course	$ 5
For advanced credit for students who are currently registered for more than seven semester hours (four or more in a summer session)—per course	$ 5
For advanced credit for students who are currently registered for seven hours or less (less than four in a summer session)—per course	$25

Service Fee. Students requesting duplicate copies of fee receipts, schedule cards, etc., must pay a service fee of $1.

Withdrawal. In order to effect a withdrawal from any class, a student must notify the Center office at the time of withdrawal. Discontinuance of class attendance is not the basis for withdrawal, and students who do not notify the office when they plan to withdraw will be given a failing grade in each course involved.

Refunds. Course fees will be refunded under any one of the following conditions:

1. Withdrawal during first and second weeks of semester, 80 per cent refund.
2. Withdrawal during third and fourth weeks of semester, 60 per cent refund.
3. Withdrawal during fifth and sixth weeks of semester, 40 per cent refund.
4. Withdrawal after sixth week of semester, no refund.
5. No refund in flight courses.

Students who register for a course and do not attend class will be withdrawn as of the first day of class and entitled to a refund of 80 per cent of the course fees paid.

Deposits on equipment are subject to regular service and breakage charges.

Refunds are not transferable from one registration period to another or from one student to another.

To be eligible for a refund the student must notify the extension office and apply for a refund at the center where he is registered at the time of his withdrawal.

GRADES AND HONORS

Instructors will assign each student a grade for each course in which he is enrolled at the close of a session. The student shall be responsible for the completion of all required work by the time of the last scheduled meeting in the course unless his assignment to the course has been properly cancelled. The grade shall indicate the student's achievement with respect to the objectives of the course.

For credit courses:

A—highest passing grade.
B
C
D—lowest passing grade; passing minimal objectives of the course.
E—conditional failure; failure to achieve minimal objectives, but only to such limited extent that credit can be obtained by examination or otherwise without repeating the entire course. This grade represents failure in the course unless and until the record is duly changed within one semester. It cannot be changed to a grade higher than a D.
F—failure to achieve minimal objectives of the course. The student must repeat the course satisfactorily in order to establish credit in it.

For zero credit courses (including thesis research but not including laboratory portions of courses in which, for purposes of scheduling, separate course designations and separate class cards are used for the laboratory sections):

S—satisfactory; meets course objectives.
U—unsatisfactory; does not meet course objectives.

For incomplete work, either credit or noncredit:

O—incomplete; no grade; a temporary record of work which was interrupted by unavoidable absence or other causes beyond a student's control, and which work was passing at the time it was interrupted. An instructor may require the student to secure the recommendation of the dean of men or the dean of women that the circumstances warrant a grade of incomplete. On the record a grade of O will be equivalent to a W unless and until the record is duly changed within one semester.

Directed grades. The registrar is directed to record the following grades and symbols under special circumstances:

W—withdrew; a record of the fact that a student was enrolled in a course and withdrew or cancelled the course after the last date for late registration and adding courses.

WF—withdrew failing; a record of course cancellation after the last date for cancelling a course without grade, at which time, according to a statement from the instructor, the student was not passing in his work. This grade counts in all respects as a failing grade.

A grade of WF may be directed by the dean of men, the dean of women, or the Committee on Scholastic Delinquency and Readmissions when a student is dropped from a course for serious scholastic delinquency.

Good Standing

For purposes of reports and communications to other institutions and agencies and in the absence of any further qualification of the term, a student shall be considered in good standing unless he has been dismissed, suspended, or dropped from the University and has not been readmitted.

SCHOLARSHIP INDEXES AND PROBATION STANDARDS

Scholarship Indexes

The scholastic standing of all regular students enrolled in programs leading to a bachelor's or associate degree shall be determined by two scholastic indexes, the Semester Index and the Graduation Index.

(a) The Semester Index is an average determined by weighting each grade received during a given semester by the number of semester hours of credit in the course.

(b) The Graduation Index is a weighted average of all grades received by a student while in the curriculum in which he is enrolled plus all other grades received in courses taken in other curricula offered by the University and properly accepted for satisfying the requirements of the curriculum of the school in which the student is enrolled. With the consent of his adviser, a student may repeat a course. In case of courses which have been repeated or in which conditional grades have been removed by examination or for which a substantially equivalent course has been substituted, the most recent grade received shall be used.

(c) For the purpose of averaging, each grade shall be weighted in the following manner:

Grade	*Weight*
A —	6 x semester hours = index points
B —	5 x semester hours = index points
C —	4 x semester hours = index points
D —	3 x semester hours = index points
E, F, WF	2 x semester hours = index points
O, W	not included

Graduation Index Requirement

For the bachelor's degree: A minimum Graduation Index of 4.00 shall be required for graduation on and after September 1, 1965. Prior to September 1, 1965, the following schedule of minimum Graduation Indexes shall be required for graduation:

All Students Graduating During	Minimum Graduation Index Required
Sept. 1, 1963-Aug. 31, 1964	3.90
Sept. 1, 1964-Aug. 31, 1965	3.95

For the associate degree: A minimum Graduation Index of 3.90 shall be required for graduation on and after September 1, 1965. Prior to September 1, 1965, the following schedule of minimum Graduation Indexes shall be required for graduation:

All Students Graduating During	Minimum Graduation Index Required
Sept. 1, 1963-Aug. 31, 1964	3.80
Sept. 1, 1964-Aug. 31, 1965	3.85

Scholastic Probation

A candidate for the bachelor's or associate degree shall be placed on probation if his semester or graduation index at the end of any semester is less than that required for a student with his classification as shown in Table A. A student on probation shall be removed from that status at the end of the first subsequent semester in which he achieves semester and graduation indexes equal to or greater than those required for a student with his classification as shown in Table A. Any grade change due to a reporting error will require reconsideration of probation status.

A student who is on probation will be assessed an additional fee of $15 for that semester.

Temporary students and graduate students are exempt from probation regulations. Probation is concerned only with the regular semesters and not with the summer sessions, summer camps, and intensive courses.

TABLE A. INDEX LEVELS FOR PROBATION

S = Semester Index; G = Graduation Index

Year Classification	Sept. 1, 1963 to Aug. 31, 1964		Sept. 1, 1964 to Aug. 31, 1965		Sept. 1, 1965 and after	
	S	G	S	G	S	G
1	3.4	3.4	3.5	3.5	3.5	3.5
2	3.5	3.5	3.5	3.5	3.5	3.5
3	3.6	3.7	3.6	3.75	3.6	3.75
4	3.6	3.8	3.6	3.85	3.6	3.90
5	3.7	3.85	3.7	3.90	3.7	3.95
6	3.7	3.9	3.7	3.95	3.7	4.0
7	3.7	3.9	3.7	3.95	3.7	4.0
8 and up	3.7	3.9	3.7	3.95	3.7	4.0

Dropping of Students for Scholastic Deficiency

A student on scholastic probation shall be dropped from the University if at the close of any semester his semester or graduation index is less than that required of a student with his classification as shown in Table B. This rule shall not apply for the semester in which the student completes all requirements for his degree.

TABLE B. INDEX LEVELS FOR DROPPING

S = Semester Index; G = Graduation Index

Year Classification	Sept. 1, 1963 to Aug. 31, 1964		Sept. 1, 1964 to Aug. 31, 1965		Sept. 1, 1965 and after	
	S	G	S	G	S	G
1*	3.2	3.2	3.2	3.2	3.2	3.2
2	3.3	3.3	3.3	3.3	3.3	3.3
3	3.4	3.5	3.4	3.5	3.4	3.5
4	3.4	3.55	3.4	3.6	3.4	3.6
5	3.5	3.65	3.5	3.7	3.5	3.7
6	3.5	3.7	3.5	3.75	3.5	3.8
7	3.5	3.75	3.5	3.80	3.5	3.85
8 and up	3.5	3.8	3.5	3.85	3.5	3.9

* Affects only students entering on probation.

A student who has been dropped may petition the Faculty Committee on Scholastic Delinquencies and Readmissions for readmission. If he is permitted to register again, he will do so on probation.

Distinguished Students

Regular undergraduate students, carrying at least 14 semester hours, who successfully complete all their courses with a grade C or higher and obtain a semester scholarship index of 5.50 or better will be designated as distinguished for that semester.

Degrees with Distinction

Degrees are awarded at the end of each semester and summer session to candidates who have completed the requirments of their schools. At each of these periods degrees with distinction are awarded to those completing the undergraduate plans of study under the following rules:

(a) Distinction at graduation shall be awarded on the basis of all course work taken. Baccalaureate degrees with distinction shall be granted only to those who complete the four (or five) year curricula at Purdue, and not to those who complete only the first three years at Purdue.

(b) A candidate for the baccalaureate degree with distinction must have earned at least 70 hours of credit at Purdue. A candidate for an associate degree with distinction must have earned at least 45 hours of credit at Purdue.

For any student to qualify for distinction, his scholarship index for all work completed must be at least 5.00.

(c) If the number of graduates in any school who qualify for distinction under rules (a) and (b) exceeds one-tenth of the total number of graduates from that school for that semester or summer session, the number of degrees with distinction shall be limited to one-tenth of the class in that school, and those graduates with highest indexes shall be included. In administering this rule all baccalaureate engineering graduates will be considered as one school and all associate degree graduates will be considered as one school.

(d) Of those students who qualify for distinction under these rules, the three-tenths of the baccalaureate graduates having the highest indexes shall be designated as graduating with highest distinction, irrespective of the schools to which they may belong. The three-tenths of the associate degree graduates having the highest indexes will be designated as graduating with highest distinction.

(e) No student with a record of faculty discipline shall be included without special approval by the faculty.

Work Toward the Four-Year Baccalaureate Degree

Students who obtain a degree of Associate in Applied Science are eligible for consideration for admission to curricula leading to the degree of Bachelor of Science in Industrial Education. Two-year graduates, who are qualified, may continue in the University by pursuing one of the following majors administered by the Department of Industrial Education.

1. **Training in Industry Major.** This program is designed for students who are primarily interested in becoming trainers in business and industrial organizations. It does not lead to a teacher's license, but instead it is planned to aid those who wish to prepare themselves for educational leadership within industry. This may include such work as management training, supervisory training, shop or on-job training, developing training programs, and a variety of other types of activity which are connected with educational work in industry. (See p. 55 for details)

2. **Industrial Arts Teaching Major.** This major is planned for those students who wish to qualify for a nonvocational license in (a) industrial arts (special); (b) industrial arts (comprehensive); or (c) general shop or special shop (restricted or conditional).

   Students graduating from the industrial education curriculum may elect to qualify for a license in industrial arts (special). If they elect to qualify for the license in industrial arts (comprehensive), they also must meet the requirements for a restricted or conditional license in at least one of the following other subject areas: biology, chemistry, mathematics, modern language, physics, social studies, English, history, physical education, or speech. (See p. 54 for details)

3. **Applied Technology Teaching Major.** The increased demand for technicians of all kinds has brought about a greatly expanded need for instructors qualified to teach subjects in applied technology. Enrollment in this major area is open to those who are specially interested in teaching in junior college divisions of technology and in technical institute type curricula. The plan of study includes advanced courses in mathematics, science, and technology plus courses in principles of education, methods of teaching and course of study organization and planning. Students who enroll in this major may wish to continue professional study until they have earned the master's degree in order to be better prepared for this kind of employment. (See p. 55 for details)

4. **General Industrial Major.** A student may prepare himself for employment in a variety of industrial occupations by satisfactorily completing the plan of study in this major area. Graduates may be employed as industrial supervisors, junior management trainees, production control specialists, industrial sales representatives, industrial casualty specialists, quality inspectors, inspection supervisors, and specialists in a number of industrial personnel activities. (See p. 57 for details)

Since the plans of study in each of these four-year curricula differ, it is necessary that each candidate have his transcript reviewed by the Department of Industrial Education before a program can be arranged for him. Inquiries should be made to Prof. H. S. Belman, Head, Department of Industrial Education, Education Building, Purdue University, Lafayette, Indiana.

TWO-YEAR UNDERGRADUATE CURRICULA LEADING TO THE DEGREE OF ASSOCIATE IN APPLIED SCIENCE

Altogether eleven two-year curricula are available. The aviation programs, the curriculum in Industrial Illustration Technology, and the Associate Degree Nursing program are offered only on the Lafayette campus. The remaining six are available at the Regional Campuses as indicated in the curricula descriptions. The programs are identified as follows:

Curriculum in Aviation Electronics Technology	AET
Curriculum in Aviation Maintenance Technology	AMT
Curriculum in Chemical and Metallurgical Engineering Technology	CMT
Curriculum in Civil Engineering Technology	CET
Curriculum in Architectural Engineering Technology	ART
Curriculum in Electrical Engineering Technology	EET
Curriculum in Industrial Engineering Technology	IET
Curriculum in Mechanical Engineering Technology	MET
Curriculum in Industrial Illustration Technology	IIT
Curriculum in Professional Pilot Technology	PPT
Curriculum in Nursing	NT

Curricula for the eleven programs of study are given on the following pages to guide students in making their own plans. Any plan differing from these shown must be approved by a counselor.

The number of courses and the total semester hours of credit required for the degree of Associate in Applied Science differ for the eleven programs. In all except the aviation programs, the curriculum in Industrial Illustration, and the Associate Degree Nursing program, however, approximately the same general organization has been followed. All two-year engineering technology curricula incorporate a minimum of 64 semester hours of university credit courses. The minimum number of semester hours in each subject matter area includes:

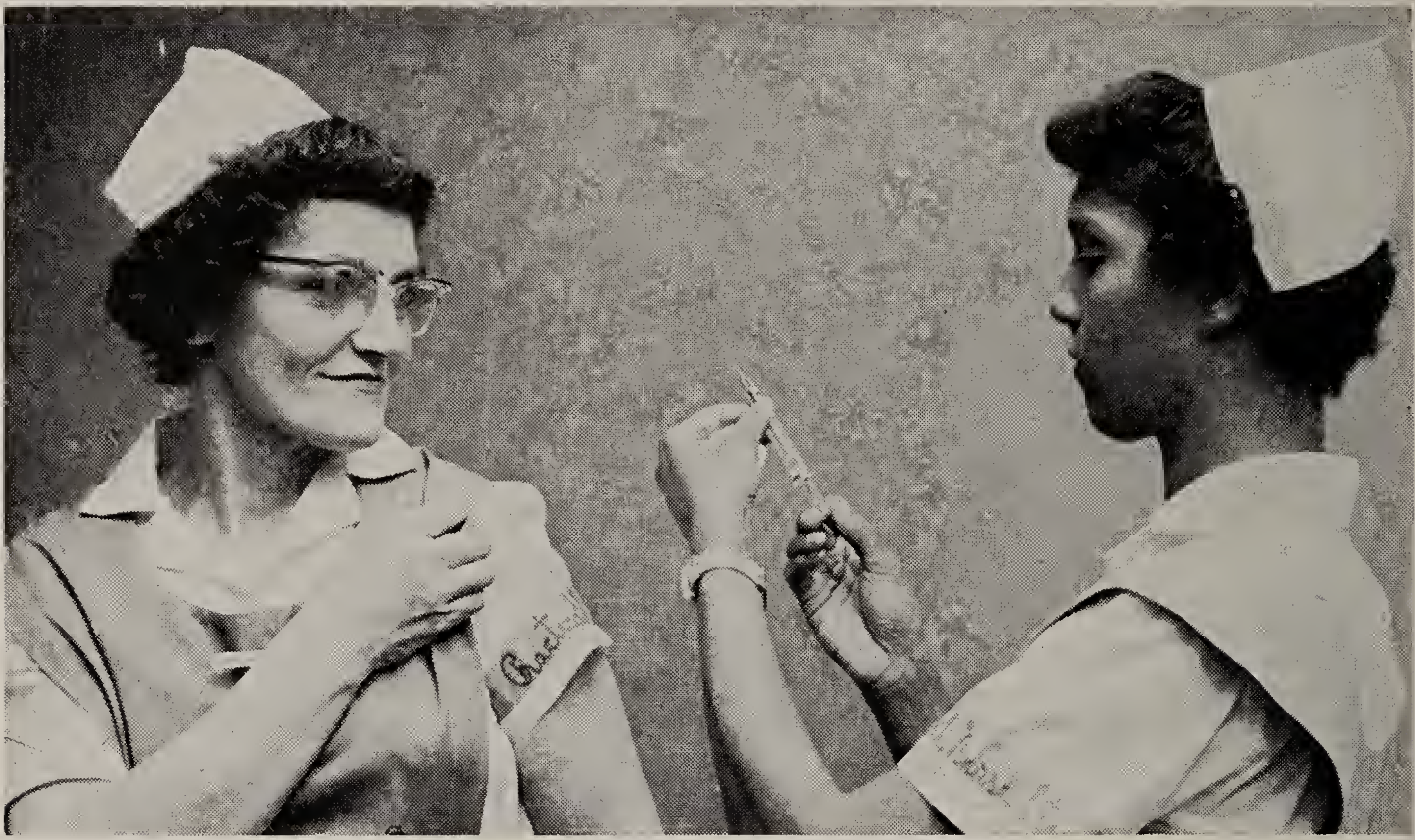
Mathematics	5
English and Speech	9
Physics	8
Specified Nontechnical Courses	6
Specified Applied Science and Technology Courses	22
Specified or Elective Applied Science, Technology, or Nontechnical Courses	14

A student desiring an associate degree in any one of the fields, must establish credit in each course listed or its equivalent. Courses not listed in the following curricula may be substituted for certain nontechnical or major field courses upon prior written consent of the head of the Department of Engineering Technology, the head of the Department of Aviation Technology, or the chairman of the Nursing section. No substitutions for fundamental courses will be allowed.

Additional Study

Students who have met the requirements for the degree of Associate in Applied Science are encouraged to take additional courses for their advancement.

Usually these courses are offered in the evening and are therefore available to employed persons. Courses of this type are scheduled when there is sufficient demand to justify them.



Practical nursing students learn techniques of giving hypodermics.

CURRICULUM IN AVIATION ELECTRONICS TECHNOLOGY

Offered: Lafayette Campus only.

The Aviation Electronics Technology program is a combination of electrical technical subjects and general academic studies. This curriculum will produce a graduate competent in electrical and electronic trouble shooting, maintenance and service as associated with aircraft systems and communications. Emphasis is placed upon understanding the fundamental principles of electricity as applied to the aviation industry.

This is an intensive, practical two-year undergraduate college program offered by the Department of Aviation Technology.

FRESHMAN YEAR

First Semester

Course	No.		Credit
*MA	151	Mathematics for Engineers	5
ENGL	101	English Composition	3
AT	131	Aircraft Electricity	3
AT	132	Electronics I	3
AT	135	Avionics Laboratoy I	2
EG	110	Drafting Fundamentals	3
			19

Second Semester

Course	No.		Credit
EG	113	Slide Rule and Graphs	1
ENGL	202	English Composition	3
AT	133	Aircraft AC Electricity	3
AT	134	Electronics II	3
AT	136	Avionics Laboratory II	2
AT	138	Aircraft and Missile Orientation	4
			16

SOPHOMORE YEAR

Third Semester

Course	No.		Credit
MA	223	Introductory Analysis I	3
PHYS	220	General Physics	4
SPE	114	Principles of Speech	3
AT	231	Aircraft Communications and Navigation Systems	3
AT	232	Electronics III	3
AT	235	Avionics Laboratory III	2
			18

Fourth Semester

Course	No.		Credit
MA	224	Introductory Analysis II	3
PHYS	221	General Physics	4
AT	236	F.C.C. Regulations	3
AT	233	Microwave Aviation Applications	3
AT	234	Electronics IV	3
AT	237	Avionics Laboratory IV	2
			18

See footnote, page 24.

CURRICULUM IN AVIATION MAINTENANCE TECHNOLOGY

Offered: Lafayette Campus only.

The Aviation Maintenance Technology program is designed to qualify high school graduates as aircraft and power plant technicians, and to give basic technical training as preparation for many industrial positions.

It is an intensive, practical two-year undergraduate college program offered by the Department of Aviation Technology.

The course work includes specialized courses in aircraft engines, aircraft fabrication, aircraft maintenance, aircraft accessories, and aircraft welding, as well as basic courses in mathematics, physics, English, and drafting.

First year of study is devoted primarily to light aircraft maintenance and inspection and allied course work, with specialized lectures and laboratories in aircraft engines, accessories, and airframes. During the second year, much of the time is devoted to providing the student with actual mechanical experience on "live" transport-type aircraft. This work is done in the Federal Aviation Agency-approved repair station operated by the Purdue Aeronautics Corporation. Beginning groups start in September of each year.

FRESHMAN YEAR

First Semester

Course	No.		Credit
AT	111	Aircraft Welding and Materials	2
AT	112	Aircraft Engines I	5
AT	114	Aircraft Engine and Accessories	5
AT	113	Federal Air Regulations & Forms	2
ENGL	101	English Composition I	3
MA	111	Algebra	3
			20

Second Semester

Course	No.		Credit
AT	115	Aircraft Fabrication	5
AT	116	Airframe Maintenance I	5
EG	110	Drafting Fundamentals	3
ENGL	202	English Composition II	3
MA	112	Trigonometry	3
EG	113	Slide Rule and Graphs	1
			20

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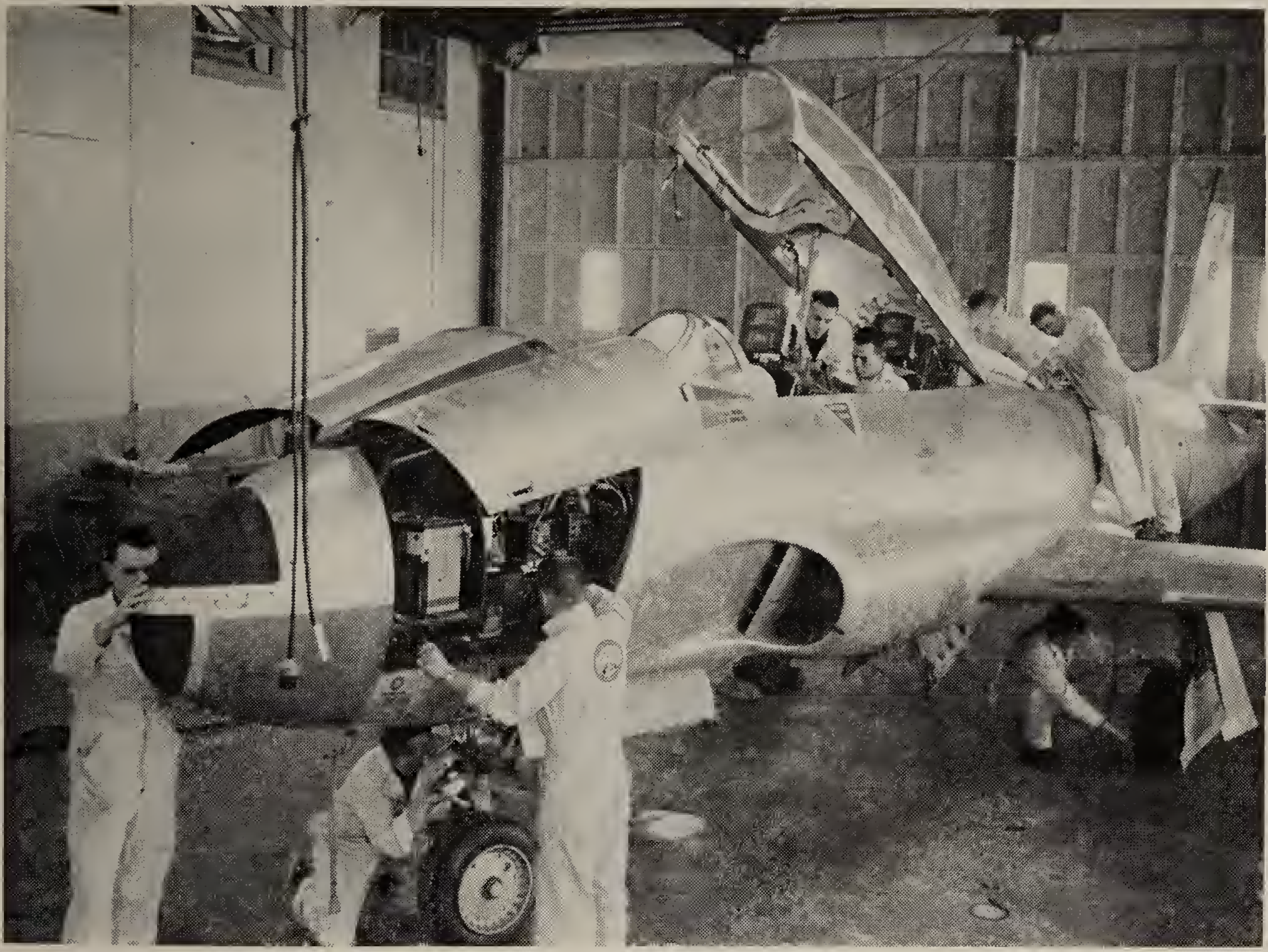
* Students entering this curriculum will be placed in one of the two following mathematics sequences, depending upon their performance on the mathematics achievement test. Sequence number 2 is used in the aviation electronics technology curriculum outlined here.

Semester	Sequence No. 1		Sequence No. 2	
1	MA 111 Algebra	(3)	MA 151 Mathematics for Engineers	(5)
2	MA 112 Trigonometry	(3)		
3	MA 223 Introductory Analysis I	(3)	MA 223 Introductory Analysis I	(3)
4	MA 224 Introductory Analysis II	(3)	MA 224 Introductory Analysis II	(3)



Aviation maintenance technicians at work.

SOPHOMORE YEAR

Third Semester

AT	211	Transport Aircraft Maintenance I	5
AT	212	Aircraft Engines II	5
AT	213	Aircraft Systems	3
PHYS	220	General Physics	4
SPE	114	Principles of Speech	3
			20

Fourth Semester

AT	214	Jet Engines and Accessories	5
AT	215	Aircraft Electricity	5
AT	216	Aircraft Propellers and Components	3
AT	217	Airframe Maintenance II	5
PHYS	221	General Physics	4
			22

CURRICULUM IN ARCHITECTURAL ENGINEERING TECHNOLOGY

Offered: Calumet Campus, Barker Memorial Center (first year), Fort Wayne Campus, and Indianapolis Campus.

This curriculum is designed to prepare students for technological employment with contractors, building materials suppliers, architects, civil engineers, and related governmental agencies.

Emphasis is placed on construction materials and processes, specifications, regulations, estimating, surveying, frame and masonry construction, and architectural and structural drafting, as well as on related courses in mathematics and physical science.

Also included are courses dealing with some of the historical, economic, and human relations aspects related to the individual in our American industrial life.

Graduates are prepared to accept positions as estimators, expeditors, planning technicians, field inspectors, architectural detailers, architectural draftsmen, and sales representatives. With experience, after completing this program of study, graduates are now holding positions as field engineers, technical engineers, junior structural engineers, engineering assistants, shop superintendents, and real estate brokers. This field of specialization is well designed to help the student who is interested in going into the construction business for himself.

FRESHMAN YEAR

First Semester

Course	No.		Credit
BC	116	Architectural Drawing	2
ENGL	101	English Compositiontion	3
MA	111	Algebra	3
PS	136	Physics: Mechanics & Heat	4
PSY	120	Psychology	3
or			
SOC	100	Introductory Sociology	3
BC	172	Systems of Construction	2
			17

Second Semester

Course	No.		Credit
BC	156	Frame Construction	3
BC	164	Building Materials	3
DM	212	Mechanics of Materials	4
EG	113	Slide Rules and Graphs	1
MA	112	Trigonometry	3
PS	176	Physics: Electricity, Sound and Light	4
			18

SOPHOMORE YEAR

Third Semester				Fourth Semester			
BC	204	Building Regulations	2	BC	276	Specifications and Contract Documents	2
BC	220	Concrete and Masonry Construction	3	GN	268	Elements of Law	3
BC	288	Elementary Surveying	2	GN	220	Technical Report Writing	3
MA	223	Introductory Analysis I or Technical Elective (3)	3	MA	224	Introductory Analysis II or Technical Elective (3)	3
		Electives	3	BC	292	Estimating	3
SP	114	Principles of Speech	3			Electives	3
			16				17

Students will select a total of 6 credit hours, with advice of Lead Teacher, from the following subjects

ELECTIVES

Third Semester				Fourth Semester			
BC	241	Architectural Design I	2	BC	242	Architectural Design II	2
BC	248	History of Architecture I	2	BC	249	History of Architecture II	2
BC	336	Reinforced Concrete	4	BC	256	Structural Drafting	3
BC	340	Construction Methods	4	BC	284	Mechanical Equipment of Buildings	2
BC	236	Architectural Projections	2	BC	266	Structures II	3
BC	265	Structures I	3	BC	278	Building Construction Practices	2

CURRICULUM IN CHEMICAL AND METALLURGICAL ENGINEERING TECHNOLOGY

Offered: Calumet Campus only.

This program of study has been developed to meet the needs of those whose interests are in the fields of chemistry and metallurgy. The plan of study has been worked out in such a way that all courses may be applied in either area.

This curriculum includes instruction in the fundamentals of industrial management, certain nontechnical subjects, mathematics, and physics, as well as in the major field of specialization.

Chemical and metallurgical technology is designed to prepare students for technological services in steel mills and metal processing and fabricating industries as well as for technician positions in general chemical and metallurgical laboratories and industries.

FRESHMAN YEAR

First Semester

Course	No.		Credit
EG	110	Drafting Fundamentals	3
GN	100	Technical Institute Orientation Lectures	1
ENGL	101	English Composition I	3
PSY	120	Psychology	3
MA	111	Algebra	3
PS	120	Introduction to Chemistry	3
PS	136	Physics: Mechanics and Heat	4
			20

Second Semester

Course	No.		Credit
CM	154	Industrial Chemistry	4
CM	184	Ferrous Metallurgy	3
GN	52	Physical Education	0
MA	112	Trigonometry	3
PS	176	Physics: Electricity, Sound, and Light	4
EG	113	Slide Rules and Graphs	1
			15

SOPHOMORE YEAR

Third Semester

CM	212	Industrial Chemistry: Qualitative	3
CM	228	Physical Metallurgy	4
CM	240	Heat Transfer	3
GN	204	Fundamentals of Practical Speaking	2
GN	220	Technical Report Writing	3
IT	104	Industrial Organization and Production	4
			19

Fourth Semester

CM	252	Industrial Chemistry: Quantitative	3
CM	280	Nonferrous Metallurgy	2
CM	284	Metallography	3
PS	284	Instrumentation	3
GN	64	Physical Education	0
GN	232	Democratic Government	2
GN	260	Economics of Industry	2
IT	152	Human Relations in Industry	3
			18

CURRICULUM IN CIVIL ENGINEERING TECHNOLOGY

Offered: Indianapolis Campus and Fort Wayne Campus.

This program of study has been designed to prepare students for employment in the organizations of land surveyors, highway departments, city engineering offices, railroads and engineering consultants, as well as in other specializations of civil engineering technology.

Emphasis is placed upon the technician's part in surveying highway layouts, steel and concrete construction, structural drafting, and sampling and testing procedures. Courses related to these subjects in mathematics and the physical sciences are taken. Also included are courses dealing with some of the historical, economic, and human relations aspects of our American industrial life, all related to the individual.

Graduates of this program accept technician positions in the offices of city engineers and professional engineers; as technicians working as topographers, topographic and structural draftsmen, and steel and concrete laboratory technicians; and as chairmen, recorders, or instrument men in technician activities with land surveys, property surveys, highway layouts, traverse and level parties, private construction companies and consulting engineering firms. With additional experience students may acquire positions as supervisors, or chiefs of parties, in a variety of construction work associated with civil engineering technology.

FRESHMAN YEAR

First Semester

Course	No.		Credit
EG	110	Drafting Fundamentals	3
CT	152	Fundamentals of Surveying	2
ENGL	101	English Composition	3
MA	151	Elementary Mathematics for Engineering and the Physical Sciences	5
PS	136	Physics: Mechanics and Heat	4
			17

Second Semester

Course	No.		Credit
EG	113	Slide Rules and Graphs	1
BC	164	Building Materials	3
CT	204	Land Surveying	2
DM	212	Mechanics of Materials	4
PS	176	Physics: Electricity, Sound, and Light	4
PSY	370	Psychology in Business and Industry	3
			17

SOPHOMORE YEAR

Third Semester

Course	No.		Credit
CT	208	Route Surveying	2
CT	252	Surfacing and Subsurface Problems	3
IT	104	Industrial Organization and Production	4
SPE	114	Principles of Speech	3
MA	223	Introductory Analysis I	3
		or Elective (3)	
		Technical Elective	3
			18

Fourth Semester

Course	No.		Credit
BC	276	Specifications and Contract Documents	2
BC	292	Estimating	3
GN	220	Technical Report Writing	3
MA	224	Introductory Analysis II	3
		or Elective (3)	
GN	268	Elements of Law	3
		Technical Elective	3
			17

TECHNICAL ELECTIVES

BC	265	Structures I	3
BC	336	Reinforced Concrete	4
CT	256	Inspection and Testing Procedures	2
CT	260	Highways	2
BC	256	Structural Drafting	3
BC	266	Structures II	3
BC	340	Construction Methods	4
CT	272	Photogrametry	1
CT	274	Land Subdivision	2
CT	299	Civil Engineering Technology	1 to 7
IT	212	Industrial Safety	2

CURRICULUM IN MECHANICAL ENGINEERING TECHNOLOGY

Offered: Barker Memorial Center (first year), Calumet Campus, Fort Wayne Center, Indianapolis Campus.

This program of study has been designed to prepare students to take employment in industries requiring services of drafting and design of a mechanical nature.

Emphasis is placed on product and tool design, mechanical maintenance, testing, inspection, and the selection of methods for efficient and economical production.

Also included are courses dealing with fundamentals of industrial management and with some of the historical, economic, and human relations aspects of our American industrial life, all related to the individual.

Graduates of this program accept jobs as laboratory technicians, engineering assistants, detailers, draftsmen, tool maintenance men, plant maintenance men, layout men, inspectors, and machine and tool salesmen. With additional experience students may aspire to positions as industrial supervisors, machine and tool designers, tool buyers, production expeditors, and cost estimators.

FRESHMAN YEAR

First Semester

Course	No.		Credit
✓ EG	110	Drafting Fundamentals	3
✓ DM	180	Materials and Processes	3
✓ ENGL	101	English Composition I	3
✓ MA	111	Algebra	3
✓ PS	136	Physics: Mechanics & Heat	4
SOC	100	Introductory Sociology	3
or			
✓ PSY	120	Psychology (3)	
			19

Second Semester

Course	No.		Credit
EG	212	Descriptive Geometry	3
DM	204	Production Drawing	3
DM	212	Mechanics of Materials	4
✓ MA	112	Trigonometry	3
PS	176	Physics: Electricity, Sound, and Light	4
✓ EG	113	Slide Rules and Graphs	1
			18

Third Semester

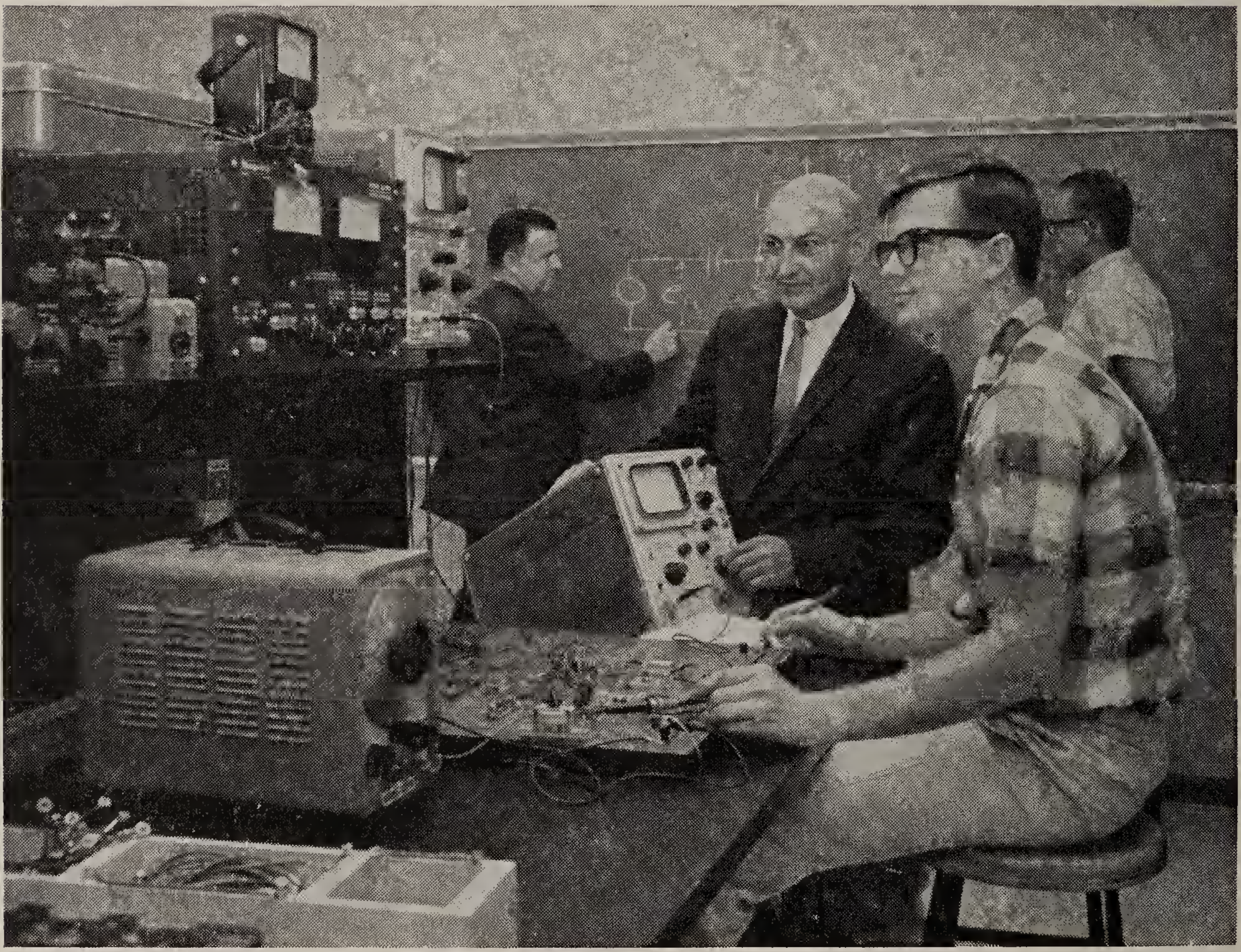
Course	No.		Credit
DM	216	Machine Elements	3
DM	232	Dynamics and Mechanisms	3
✓ SPE	114	Speech	3
IT	104	Industrial Organization and Production	4
MA	223	Introductory Analysis I	3
		or Technical Elective (3)	
		Elective	3
			19

Fourth Semester

Course	No.		Credit
DM	200	Power Systems	3
ET	216	Electrical Machines and Controls	3
GN	220	Technical Report Writing	3
GN	268	Elements of Law	3
MA	224	Introductory Analysis II	3
		or Technical Elective (3)	
		Elective	3
			18

TECHNICAL ELECTIVES

			Credits
DM	228	Machine Design I	3
DM	236	Jig and Fixture Design	3
DM	256	Material Fabrication	3
DM	264	Machine Design II	3
DM	288	Die Design	3
DM	294	Mechanical Analysis	3
PS	284	Instrumentation	3
IT	204	Techniques of Maintaining Quality	3
IT	152	Human Relations in Industry	3



Transistor amplifier testing project.

CURRICULUM IN ELECTRICAL ENGINEERING TECHNOLOGY

Offered: Option A, Calumet Campus only; Option B, Calumet Campus and Indianapolis Campus; Option C, Calumet Campus, Fort Wayne Campus, and Indianapolis Campus.

The Electrical Engineering Technology programs are designed to prepare students for technological employment with electrical communication industries; light and power industries; manufacturers of electrical equipment; and electrical suppliers and distributors; or with an industry where electrical power and controls are utilized.

General emphasis in all three options is placed upon understanding the fundamental principles of electricity and their present-day applications, with special consideration given to modern developments in communications, automation, and industrial practices.

Also included are courses dealing with the fundamentals of industrial management and with some of the historical, economic, and human relations aspects of our American industrial life—all related to the individual.

Option A, Industrial Electricity, stresses the application of direct and alternating current theory to electrical machinery and instruments—including power generation, transmission, measurement, and control. Emphasis is placed upon courses in circuit theory, machinery, electrical measurements, and electronic and magnetic controls in automation systems. Students are prepared to accept positions as electrical engineering assistants, maintenance men, trouble shooters, repair men, laboratory technicians, etc.

Option B, Radio and Television, stresses basic electronics (including modern transistors) as applied to radio and television transmission and reception. Special emphasis is placed on trouble shooting, maintenance, and repair of radio and television—including colored TV. Students are prepared to accept positions with radio and TV manufacturers and broadcasting companies. Many go into sales, service, or contracting business for themselves.

Option C, Industrial Electronics. Increased industrial usage of electronic devices for testing, measurement, and control—especially in automation systems—has created a growing demand for highly skilled electronics technicians. Electronic fundamentals, components, and circuits, as well as transistors applied in these areas, are stressed. Special emphasis is given to instruments, instrumentation, and experimental and testing procedures, including the electronic components and circuitry of systems applied to automation. Students are prepared to accept positions as electronic technicians in installation, trouble shooting, maintenance, sales, and related activities.

Within their own specialized areas, students from any option may accept positions as electrical draftsmen, estimators, inspectors, salesmen, checkers, analysts, testers, technical writers, etc.

After experience and continued growth in their fields, graduates are now holding such positions as supervisors, managers, sales engineers, customer engineers, contractors, field engineers, and application engineers.

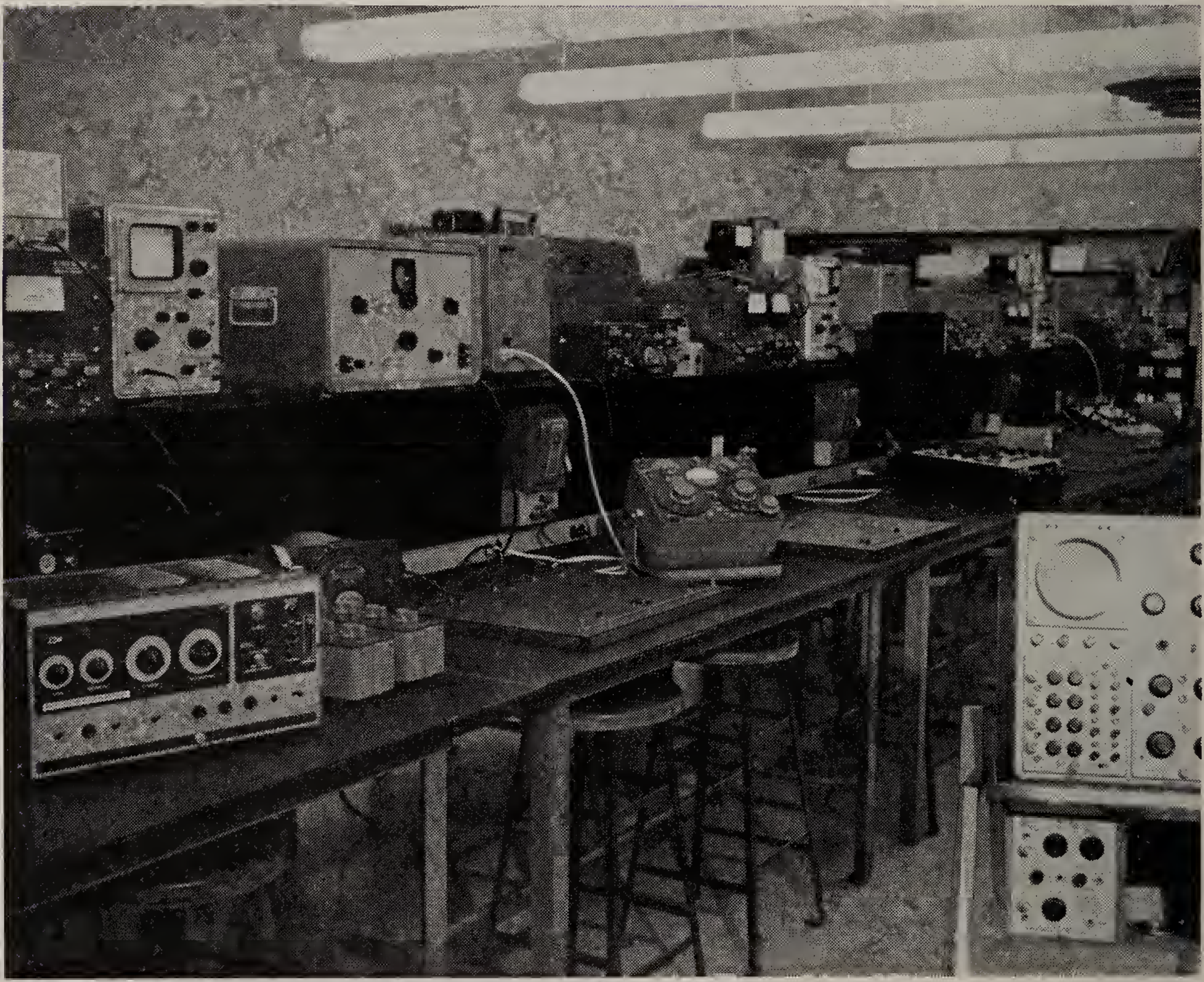
FRESHMAN YEAR

First Semester

Course	No.		Credit
✓ ET	104	Electronics I—Circuits	4
✓ GN	100	Technical Institute Orientation Lectures	1
✓ ENGL	101	English Composition I	3
✓ MA	111	Algebra	3
✓ PS	120	Introduction to Chemistry	3
✓ PS	176	Physics: Electricity, Sound, and Light	4
			18

Second Semester

Course	No.		Credit
ET	156	Electronics II—Semiconductors; Transistors	3
ET	176	Electrical Circuits	4
✓ GN	52	Physical Education	0
GN	232	Democratic Government	2
✓ PS	136	Physics: Mechanics and Heat	4
✓ MA	112	Trigonometry	3
✓ EG	113	Slide Rules and Graphs	1
			17



Electronics measurements laboratory.

SOPHOMORE YEAR

OPTION A: INDUSTRIAL ELECTRICITY

Third Semester

✓EG	110	Drafting Fundamentals	3
ET	212	Electrical Machines	5
ET	228	Power Distribution	2
PSY	120	Psychology	3
✓GN	204	Fundamentals of Practical Speaking	2
GN	220	Technical Report Writing	3
✓IT	104	Industrial Organization and Production	4
			22

Fourth Semester

ET	252	Electrical Power Blueprints and Diagrams	2
ET	264	Electrical Measurements	4
ET	268	Control of Electric Motors	4
ET	273	Automation and Electronic Controls	5
✓GN	64	Physical Education	0
✓GN	260	Economics of Industry	2
IT	152	Human Relations in Industry	3
			20

OPTION B: RADIO AND TELEVISON

Third Semester

EG	110	Drafting Fundamentals	3
ET	224	Fundamentals of Television	2
ET	236	Electronics III—Radio Circuits	5
PSY	120	Psychology	3
GN	204	Fundamentals of Practical Speaking	2
GN	220	Technical Report Writing	3
IT	104	Industrial Organization and Production	4
			22

Fourth Semester

ET	264	Electrical Measurements	4
ET	276	Electronic Trouble Shooting	2
ET	292	Television Circuits	4
ET	297	Color Television	4
GN	64	Physical Education	0
GN	260	Economics of Industry	2
IT	152	Human Relations in Industry	3
			19

OPTION C: INDUSTRIAL ELECTRONICS

Third Semester

EG	110	Drafting Fundamentals	3
ET	208	AC & DC Machines and Controls	2
ET	236	Electronics III—Radio Circuits	5
PSY	120	Psychology	3
GN	204	Fundamentals of Practical Speaking	2
GN	220	Technical Report Writing	3
IT	104	Industrial Organization and Production	4
			22

Fourth Semester

ET	257	Electronics IV—Transmitters	3
ET	264	Electrical Measurements	4
ET	273	Automation and Electronic Controls	5
ET	276	Electronic Trouble Shooting	2
GN	64	Physical Education	0
GN	260	Economics of Industry	2
IT	152	Human Relations in Industry	3
			19

CURRICULUM IN INDUSTRIAL ENGINEERING TECHNOLOGY

Offered: Calumet Campus, Barker Memorial Center (first year), Fort Wayne Campus, Indianapolis Campus.

This major field of specialization is designed to prepare students primarily for technological services in the industrial engineering areas of production planning and control, plant layout, quality control, job evaluation, and cost analysis. It also covers the essentials of management with which foremen, supervisors, and administrative personnel in general are concerned.

Typical jobs are time-study man, methods planner, production control clerk, stock supervisor, cost analyst, job analyst, and personnel interviewer.

Emphasis is placed upon courses in motion and time study, job evaluation, wage incentives, production and operation planning, plant layout, and industrial safety, and on courses in mathematics, physics, and chemistry.

Also included are courses dealing with some of the historical, economic and human relations aspects of our American industrial life, all related to the individual.

FRESHMAN YEAR

First Semester

Course	No.		Credit
EG	110	Drafting Fundamentals	3
IT	104	Industrial Organization and Management	4
IT	110	Electronic Data Processing	3
MA	151	Elementary Mathematics for Engineering and the Physical Sciences	5
PS	136	Physics: Mechanics and Heat	4
			19

Second Semester

Course	No.		Credit
ENGL	101	English Composition	3
IT	120	Systems and Procedures	3
IT	262	Motion Study and Work Methods	3
PSY	370	Psychology in Business and Industry	3
EG	113	Slide Rules and Graphs	1
PS	176	Physics: Electricity, Sound, and Light	4
			17

Third Semester

Course	No.		Credit
IT	200	Computer Programming Fundamentals	3
ECON	210	Principles of Economics	3
IT	152	Human Relations in Industry	3
IT	204	Techniques of Maintaining Quality	3
IT	266	Work Measurement and Incentives	3
MA	223	Introductory Analysis I or Elective (3)	3
			18

Fourth Semester

Course	No.		Credit
IT	212	Industrial Safety	2
IT	224	Production Planning and Control	4
IT	250	Fundamentals of Production Cost Analysis	3
GN	220	Technical Report Writing	3
MA	224	Introductory Analysis II or Elective (3)	3
SPE	114	Principles of Speech	3
			18

ELECTIVES

GN	268	Elements of Law	3
ET	106	Introduction to Computer Fundamentals	3
IT	208	Integrated Systems Analysis	3
IT	268	Plant Layout	3
IT	272	Job Evaluation	2
IT	296	Industrial Engineering Case Problems	2
IT	312	Materials Handling	3
IT	368	Legislation Affecting Industrial Relations	4
PS	284	Instrumentation	3
STAT	351	Elementary Statistics I	3
STAT	352	Elementary Statistics II	3

CURRICULUM IN PROFESSIONAL PILOT TECHNOLOGY

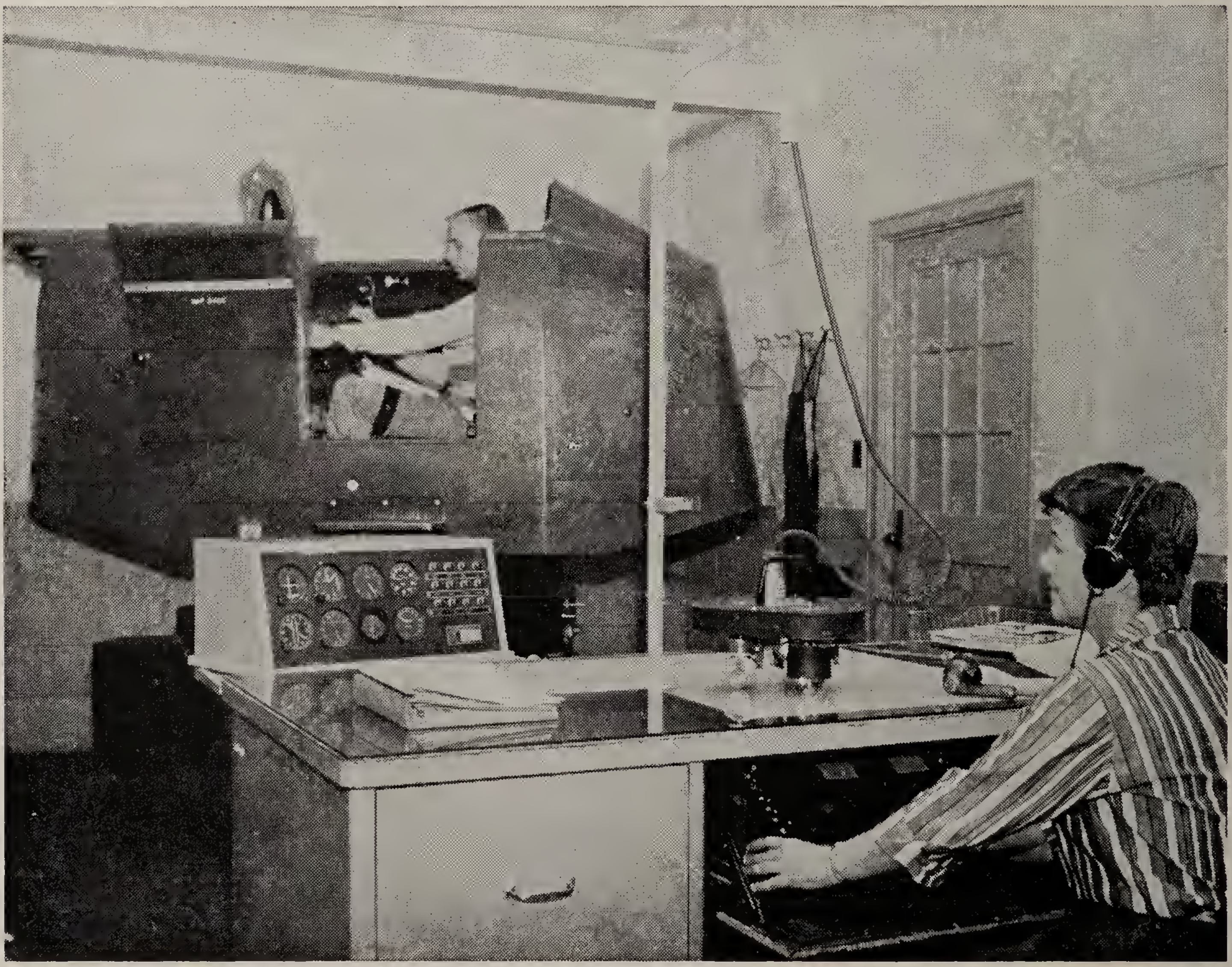
Offered: Lafayette Campus only.

The curriculum in Professional Pilot Technology is designed to prepare high school graduates possessing commercial pilot's licenses for careers as airline or corporation pilots. This intensive two-year program combines regular classroom courses with advanced flight instruction in transport category DC-3 aircraft and flight engineer training in DC-6 aircraft. The student, upon graduation, has experience in the operation of both two- and four-engine airline equipment and in airline operation and organization.

To be eligible for admission, applicants must be high school graduates. They must hold an FAA commercial pilot's license. Students beyond the ages usually employed by the airlines should not apply unless they plan to seek executive pilot employment where age is more desirable.

During the 12-month period following the completion of the first year and after DC-3 certification the students will receive $100 a month stipend. Each student will log a minimum of 250 hours of DC-3 co-pilot flight time, and a minimum of 5 hours DC-6 flight engineer time.

Professional pilot students receive airline type link instruction.



CURRICULUM IN PROFESSIONAL PILOT TECHNOLOGY

First Semester
(Begins in February)

Course	No.		Credit
MA	111	Algebra	3
ENGL	101	English Composition	3
AT	125	Aeronautics	2
AT	121	Aircraft Engines	3
AT	120	Meteorology	3
AT	122	Airways Procedures I	3
AT	124	Navigation I	2
AT	126	Regulations and Flight Planning I	1
			20

Second Semester
(Begins in September)

Course	No.		Credit
MA	112	Trigonometry	3
SPE	114	Principles of Speech	3
PHYS	205	Outline of Physics	4
AT	128	Aircraft Systems and Components	3
AT	123	Airline Operations	1
AT	129	Airways Procedures II	4
AT	127	Navigation II	2
AT	130	Regulations and Flight Planning II	2
			22

Third Semester
(Begins in February)

AT	221	DC-3 Flight Transition	1
AT	262	DC-6 Aircraft Familiarization	5
AT	260	Airline Transport Regulations and Radio Procedures	2
AT	222	Airways Procedures III	2
AT	226	Applied Meteorology I	3
AT	220	Applied Navigation I	3
AT	223	Flight Planning and Management I	2
AT	224	DC-3 Flight I	3
			21

SPECIAL SUMMER SESSION
(Begins June 3, ends September 6)

AT	263	DC-6 Aircraft and Engine Familiarizazation	4
AT	264	DC-6 Normal Operaations	1
AT	261	Airline Transport Navigation and Meteorology	2
AT	225	Airways Procedures IV	2
AT	230	Applied Meteorology II	3
AT	227	Applied Navigation II	3
AT	229	Flight Planning and Management II	2
AT	228	DC-3 Flight II	3
			20

Fifth Semester
(Begins in September)

AT	326	DC-6 Normal and Emergency Operations	4
AT	327	DC-6 Procedural Trainer	1
AT	328	DC-6 Flight Engineering	1
AT	321	Airways Procedures V	2
AT	322	Applied Meteorology III	3
AT	323	Applied Navigation III	3
AT	325	Flight Planning and Management III	2
AT	324	DC-3 Flight III	3
			19

CURRICULUM IN INDUSTRIAL ILLUSTRATION TECHNOLOGY

Offered: Lafayette Campus only.

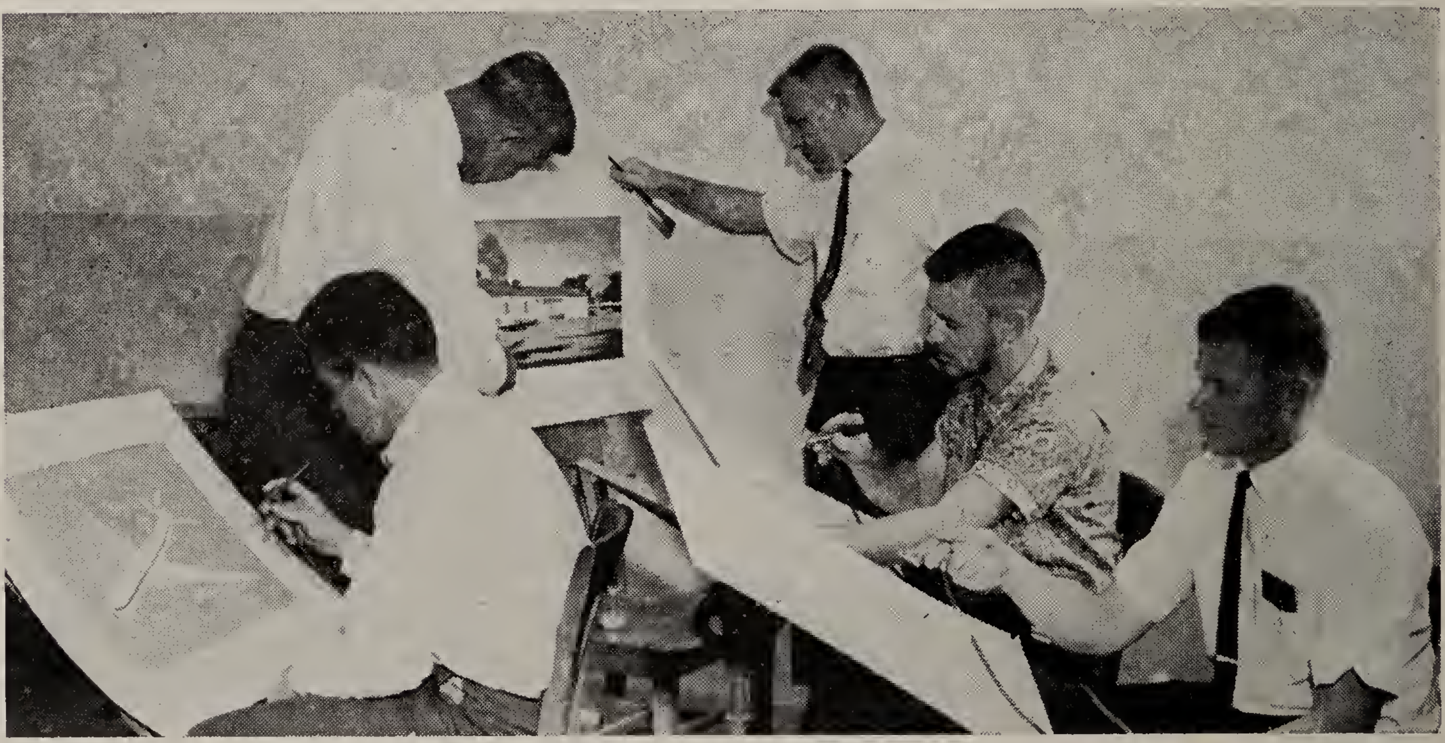
This curriculum has been designed to prepare students as technical illustrators who will be competent in designing and producing the finished art work necessary for brochures, charts, catalogs, instruction booklets, posters and other publications of modern industry. At the same time they have gained the additional skills of a draftsman and are technically prepared for advancement as a product designer of an unlimited number of manufactured products.

Graduates are prepared to accept positions in the sales divisions of industrial organizations, in governmental agencies, in certain phases of printing, advertising and display, as well as in drafting rooms of manufacturing companies—some openings are also available in television and allied entertainment fields. The aggressive graduate should be able to operate on a free lance basis after two or three years of practical experience.

FRESHMAN YEAR

First Semester				Second Semester			
Course	No.		Credit	Course	No.		Credit
ENGL	101	English Composition I	3	MA	112	Trigonometry	3
MA	111	Algebra	3	PHYS	205	Outline of Physics	4
TAA	115	General Metals	2	EG	111	Advanced Drafting	3
EG	110	Drafting Fundamentals	3	EG	210	Industrial Sketching	2
EG	112	Layout, Lettering and Typography	3	EG	212	Descriptive Geometry	3
EG	213	Freehand Sketching	2	SOC	100	Introductory Sociology	3
			16				18

Students practice art techniques in industrial illustration class.



SOPHOMORE YEAR

Third Semester

ENGL	202	English Composition II	3
TAA	301	Product-Process Relationships on Manufacturing	2
EG	311	Industrial Arts Design	3
EG	312	Shades, Shadows and Perspective	3
AD	375	Scultpure	3
ECON	210	Principles of Economics	3
			17

Fourth Semester

PSY	370	Psychology in Business and Industry	3
TAA	324	Offset Lithography	2
IE	366	Elements of Production Management	3
EG	315	Graphical Presentation of Data	2
EG	317	Production Illustration	3
EG	318	Projects in Technical Illustration	3
			16

CURRICULUM IN NURSING (LEADING TO RN)

Offered: Lafayette Campus only.

This program of nursing education provides a means of correlating the philosophy and standards of nursing education with those of general education. The over-all standards and policies of the University apply to the program in nursing as they do to the other educational programs within the University. The associate degree program is designed to fulfill the educational needs of qualified high school graduates (1) who want to prepare for nursing in a relatively short time and (2) who want to study in a multi-purpose collegiate institution where they share the responsibilities, privileges, intellectual and social experiences with all other students. Clinical practice experiences are obtained in these cooperating hospitals:

Home Hospital
Purdue University Student Health Center
St. Elizabeth Hospital
Wabash Valley Hospital

The University nursing faculty selects, supervises, and evaluates all learning experiences.

Graduates are prepared to give care to patients as beginning general duty nurses, drawing upon their scientific knowledge and understanding of human behavior and needs. They are prepared to develop satisfactory relationships with people, to cooperate and share responsibility for their patients' welfare with other members of the nursing and health staff, and to be self-directive in learning from experience as practicing nurses.

Graduates of the associate degree program in nursing are eligible for state examinations for licensure as registered nurses.

FRESHMAN YEAR

First Semester

Course	No.		Credit
BIO	201	Biology of Man	2
BIO	202	Laboratory in Human Biology	1
CHM	119	General Chemistry	3
ENGL	101	English Composition I	3
SOC	100	Introductory Sociology	3
NT	110	Introduction to Nursing	5
PEW	100	Physical Education	1
			18

Second Semester

Course	No.		Credit
BIO	203	Biology of Man	2
BIO	204	Laboratory in Human Biology	1
BIO	220	Introduction to Microbiology	3
F&N	303	Essentials of Nutrition	3
NT	111	Medical-Surgical Nursing I	8
PEW	100	Physical Education	1
			18

Summer Session

Course	No.		Credit
NT	204	Maternal and Child Nursing I	3
PCOL	201	Pharmacology	3
		Elective in English, Social Sciences, or Speech	3
			9

Associate degree nursing students receive training in child care

SOPHOMORE YEAR

Third Semester

NT	212	Medical-Surgical Nursing II	5
PSY	120	Elementary Psychology	3
NT	205	Maternal and Child Nursing II	6
		Elective in English, Social Sciences, or Speech	3
			17

Fourth Semester

NT	220	Psychiatric Nursing	4
NT	213	Medical-Surgical Nursing III	8
NT	250	Seminar in Nursing	2
		Elective in English, Social Sciences, or Speech	3
			17

CERTIFICATE PROGRAMS IN APPLIED TECHNOLOGY

The certificate programs are designed primarily for the more mature part-time student through consultation with leaders from busines and industry. Each program is actively reviewed in the light of the latest trends in manufacturing and plant and business operations.

These are intensive and practical programs of less than 40 semester hours of credit. Advancement in each of these programs can be varied to suit the needs of the individual student who may take one, two, or three courses each semester. The average part-time student can complete any one of the programs within three years.

Enrollment is on the basis of a program carefully tailored to meet individual student needs and vocational objectives through consultation with an experienced counselor. Changes in the student's program arising out of new work assignments or changes in vocational objective may be worked out with his counselor.

In those engineering technology areas which have a counterpart in the two-year curricula, a student may work toward the certificate and then toward the associate degree, provided he has been admitted as a regular student.

ARCHITECTURAL DRAFTING CERTIFICATE PROGRAM

This is the counterpart of the Architectural Engineering Technology program. It is an intensive and practical program of 36 semester hours credit designed to prepare part-time students for technological employment with architects or to aid beginning employees in quickly developing greater competence in this field.

In the earlier courses, emphasis is placed on the fundamentals of architectural drafting as commonly utilized in architecture. After competence in the fundamental techniques is established, the emphasis shifts to fundamental knowledge of materials and practices in modern architecture and to general knowledge required of architects' assistants.

Course No.		Credits
MA 111	Algebra	3
BC 116	Architectural Drawing	2
BC 164	Building Materials	3
MA 112	Trigonometry	3
PS 136	Physics: Mechanics and Heat	4
BC 156	Frame Construction	3
BC 276	Specifications and Contract Documents	2
BC 236	Architectural Projections	2
BC 220	Concrete and Masonry Construction	3
DM 212	Mechanics of Materials	4
BC 172	Systems of Construction	2
BC 256	Structural Drafting	3
BC 204	Building Regulations	2
		36

MACHINE DESIGN CERTIFICATE PROGRAM

This is the counterpart of the Mechanical Engineering Technology program and is an intensive and practical program of 38 semester hours. It is designed to train part-time students in the fundamentals of industrial drafting and to work progressively into the principles of mechanical design.

It prepares and assists technical employees to work in drafting techniques associated with general product design or as mechanical engineering assistants.

Course No.		Credits
EG 110	Drafting Fundamentals	3
MA 111	Algebra	3
DM 156	Graphical Computations	3
MA 112	Trigonometry	3
DM 180	Materials and Processes	3
PS 136	Physics: Mechanics and Heat	4
DM 204	Production Drawing	3
DM 212	Mechanics of Materials	4
DM 228	Machine Design I	3
DM 264	Machine Design II	3
DM 216	Machine Elements	3
DM 232	Dynamics & Mechanisms	3
		38

ELECTRICAL POWER CERTIFICATE PROGRAM

This is the counterpart of the Electrical Engineering Technology program and is an intensive and practical program of 35 semester hours.

It is designed to assist part-time students in the engineering technician area in the field of power generation, transmission, and utilization. Such employees will generally be assistants to electrical engineers.

The program begins with the fundamental mathematics, science, and electricity required to develop a background of understanding for the applications and practices studied later in the program.

Course No.		Credits
ET 104	Electronics I—Circuits	4
MA 111	Algebra	3
PS 176	Physics: Electricity, Sound, and Light	4
ET 212	Electrical Machines	5
MA 112	Trigonometry	3
ET 176	Electrical Circuits	4
ET 228	Power Distribution	2
ET 268	Control of Electric Motors	4
ET 252	Electric Power Blue Prints and Diagrams	2
ET 264	Electrical Measurements	4
		35

INDUSTRIAL ELECTRONICS AND INSTRUMENTATION CERTIFICATE PROGRAM

This is the counterpart of the Electrical Engineering Technology program and is an intensive and practical program of 36 semester hours. It is designed to assist part-time students working in the field of electronics to prepare for positions with automation systems in testing, maintenance, installation, and operations. Such employees may work as assistants to electronic engineers.

The program begins with fundamental science and electrical concepts required to develop competence based upon understanding in the applications and practices studied later in the program.

Course No.			Credits
ET	104	Electronics I—Circuits	4
MA	111	Algebra	3
PS	176	Physics: Electricity, Sound, and Light	4
ET	156	Electronics II—Semiconductors; Transistors	3
MA	112	Trigonometry	3
ET	176	Electrical Circuits	4
ET	236	Electronics III—Radio Circuits	5
PS	284	Instrumentation	3
ET	208	AC and DC Machines and Controls	2
ET	272	Automation and Electronic Control	5
			36

INDUSTRIAL AND LABOR RELATIONS CERTIFICATE PROGRAM

Training in industrial and labor relations is essential for those engaged in the field of employment relationship. Sound employee-employer relations prevail only where representatives of both sides, labor and management, are adequately trained and experienced. The two-year day and evening course of study provides labor relations assistants and union officers with professional education needed to handle the basic problems that arise in industry and labor. The program consists of 29 credits.

Required Courses			Credits
GN	240	Labor Relations Problems	3
GN	268	Elements of Law	3
IT	104	Industrial Organization and Production	4
Recommended Courses			
ENGL	101	English Composition	3
PSY	120	Psychology	3
*GN	204	Fundamentals of Practical Speaking	2
GN	260	Economics of Industry	2
GN	264	Conference Speaking	2
IT	152	Human Relations in Industry	3
IT	368	Legislation Affecting Industrial Relations	4

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*Students may substitute this course:

SP 114 Speech .... (3)

Optional Courses

IT	260	Motion and Time Study	3
IT	272	Job Evaluation	2
IT	280	Wage Incentives	2

PROFESSIONAL FOREMANSHIP CERTIFICATE PROGRAM

The Professional Foremanship certificate program is an intensive and practical curriculum equivalent to 37 semester hours. It is intended to provide foremen with the professional education needed to handle the many supervisory and technical problems which they meet daily in technical, communications, and human relations fields.

The program has been set up by representatives of industry, professional foremen's organizations, and the University. It is designed to meet the needs of management, which is vitally concerned with training foremen for positions of leadership.

The Professional Foremanship program is the certificate program counterpart of the Industrial Engineering Technology two-year curriculum. Enrollment is on the basis of a program worked out with the counselor assigned and carefully tailored to individual needs.

Students admitted in the temporary classification may qualify for the certificate in Professional Foremanship by taking approved undergraduate level, lower division technology courses for which their admission classification establishes eligibility and for which they have necessary prerequisites. Appropriate credits earned in this program while in the temporary student classification may be used for credit toward an associate degree under rules governing reclassification as a regular student.

Required Courses—11 semester hours minimum

Course No.			Credits	Credits
IT	104	Industrial Organization and Production	4	4
PSY	120	Psychology OR	3	—
GN	120	Psychology	—	2
IT	152	Human Relations in Industry	3	3
SP	114	Principles of Speech OR	3	—
GN	204	Fundamentals of Practical Speaking	—	2
			13	11

Optional Courses—14 semester hours maximum chosen from one or a combination of the following groups:

Group I—14 semester hours maximum
- Communications—10 semester hours maximum
- English and Report Writing—7 hours maximum
- Advanced courses in Speech—3 hours maximum
- Economics and Labor Relations—6 hours maximum
- Physical Sciences—12 hours maximum

Group II—8 semester hours maximum
- Courses specific to two-year diploma curricula—8 semester hours maximum
- Courses from one or more technologies may be elected in this group

provided that (1) they relate directly to the individual's duties, responsibilities, or line of promotability; and (2) prior approval of the counselor and the head of the Department of Engineering Technology is obtained.

MANAGEMENT EXPERIENCE—(Equivalent to 12 semester hours)

Before receiving the Profesional Foremanship Certificate, the candidate must have had two years of successful experience in the management field. Satisfaction of this requirement is met by a confirming letter from the managerial employer under whom the candidate worked. Formal credit is not established for this work, but it is considered equivalent to 12 semester hours of credit in the Professional Foremanship program.

RADIO AND TV CERTIFICATE PROGRAM

This is an intensive and practical program of 35 semester hours and is intended for maintenance, operational, and production technical personnel in the fields of electronics communication, primarily radio and television.

Course No.			Credits
ET	104	Electronics I—Tube Circuits	3
MA	111	Algebra	3
PS	176	Physics: Electricity, Sound and Light	4
ET	156	Electronics II—Semiconductors; Transistors	3
MA	112	Trigonometry	3
ET	176	Electrical Circuits	4
ET	236	Electronics III—Radio Circuits	5
ET	256	Electronics IV—Transmitters	3
ET	224	Fundamentals of Television	2
ET	292	Television Circuits	3
ET	276	Electronic Trouble Shooting	2
			35

TOOL DESIGN CERTIFICATE PROGRAM

This is the counterpart of the Mechanical Engineering Technology program. It is an intensive and practical program of 35 semester hours designed to train part-time students in the fundamentals of industrial drafting and to advance them progressively into the principles of design as applied to industrial production tools and machines.

Course No.			Credits
EG	110	Drafting Fundamentals	3
MA	111	Algebra	3
DM	156	Graphical Computations	3
MA	112	Trigonometry	3
DM	204	Production Drawing	3
PS	136	Physics: Mechanics and Heat	4
DM	212	Mechanics of Materials	4
DM	236	Jig and Fixture Design	3
DM	288	Die Design	3
DM	216	Machine Elements	3
DM	232	Dynamics and Mechanisms	3
			35

PRACTICAL NURSING CERTIFICATE PROGRAM

Offered: Calumet Campus only.

The National Association for Practical Nursing Education defines a practical nurse as a person trained to care for selected subacute convalescent and chronic patients, and to assist the professional nurse in a team relationship, especially in the care of those more acutely ill. She provides nursing service in private homes and in institutions. She may be employed by the lay public, hospitals, or health agencies. A practical nurse works only under the direct orders of a licensed physician or the supervision of a registered professional nurse.

The program emphasizes the acquisition of skills in caring for the patient and assisting with the home and hospital duties associated with illness and convalescence. To the extent possible the skills and techniques are soundly grounded in understanding of the basic principles involved.

The course consists of 16 weeks of classroom and laboratory instruction at the Calumet Campus followed by four 8-week periods at each of the four cooperating hospitals. All instruction is under the supervision of Purdue University working in cooperation with a Community Advisory Council. The program is accredited by the Indiana State Board of Nurses Registration and Nursing Education.

First Semester

Course	No.	Course Title	Class	Lab.	Cert. Units	Fee
NT	8	Vocational Ethics and Personal Hygiene	6	0	6	$38
NT	16	Family Living	5	4	7	$74
NT	24	Nursing Care	5	11	10	$63

Second and Third Semesters

Course	No.	Course Title	Class	Lab.	Cert. Units	Fee
NT	44	Medical Clinical Experience, 8 weeks	4	36	11	$10
NT	56	Surgical Clinical Experience, 8 weeks	4	36	11	$10
NT	64	Maternity Clinical Experience, 8 weeks	4	36	11	$10
NT	72	Pediatrics and Long-term Illness Clinical Experience, 8 weeks	4	36	11	$10

COMPUTER TECHNOLOGY CERTIFICATE PROGRAM

Offered: Calumet and Indianapolis Campuses.

In cooperation with the Division of Vocational Education, Indiana Department of Public Instruction, Purdue University and a special industrial committee developed the following two curricula.

(1) BUSINESS DATA PROCESSING for accountants, office managers, adults, and recent high school graduates interested in careers in business data processing.

(2) SCIENTIFIC DATA PROCESSING for scientists, engineers, technicians, adults, and recent high school graduates interested in careers in scientific data processing.

Scope and Major Features of the Computer Technology Curricula

Study has shown that a need exists for training of highly skilled computer science technicians in two major areas: (1) the business data processing field and (2) the scientific data processing field. There are many similarities in the training requirements but there are also significant differences. The similarities and differences have been considered in the development of the proposed curricula.

The emphasis through the curriculum of both programs is upon data processing and is roughly divided into these areas: organization of business and industry, data processing equipment and systems, business and scientific applications, and supporting mathematics, communication skills, physical sciences, and social sciences.

The Computer Technology curriculum in business data processing consists of 61 certificate units, and the curriculum in scientific data processing consists of 65 certificate units. An appropriate certificate will be awarded upon satisfactory completion of all requirements in both programs.

Opportunities for Graduates

The technician trained in business data processing would find employment in the business and industrial field where the major activity was concerned with record keeping and accounting, while the technician trained in scientific data processing would be employed in industrial engineering and scientific firms where the major activity would be of a problem solving nature.

FRESHMAN YEAR

Business Data Processing

First Semester

Course	No.		Certificate Units
*IT	10	Introduction to Data Processing	7
IT	44	Accounting I—Data Processing	3
PS	22	Data Processing Mathematics I	2
		Social Science Elective	3
			15

Second Semester

Course	No.		Certificate Units
*GN	8	Communication Skills	3
*IT	20	Introduction to Programming Systems	3
IT	45	Accounting II—Data Processing	3
IT	54	Data Processing Applications	3
PS	23	Data Processing Mathematics II	3
			15

SOPHOMORE YEAR

Third Semester

Course	No.		Certificate Units
*GN	22	Technical Report Writing	3
IT	64	Computer Programming I	3
*PS	82	Introduction to Statistics	3
IT	4	Business Organization	4
		Business Elective	3
			16

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* Courses common to both scientific and business data processing curricula.

Fourth Semester

Course	No.		Certificate Units
IT	65	Computer Programming II	3
*IT	72	Systems Development and Design	4
IT	84	Advanced Programming Systems	3
IT	92	Computer Field Project	2
*GN	60	Economics	3
			15

FRESHMAN YEAR

Scientific Data Processing

First Semester

Course	No.		Certificate Units
*IT	10	Introduction to Data Processing	7
PS	32	Computer Mathematics I	5
PS	42	Physical Science I	4
			16

Second Semester

Course	No.		Certificate Units
*IT	20	Introduction to Programming Systems	3
PS	33	Computer Mathematics II	3
PS	43	Physical Science II	4
*GN	8	Communication Skills	3
		Social Science Elective	3
			16

SOPHOMORE YEAR

Third Semester

Course	No.		Certificate Units
*GN	22	Technical Report Writing	3
IT	88	Computer Programming Science	3
ET	12	Computer Electronics I	3
PS	62	Computer Mathematics III	3
PS	68	Numerical Analysis I	3
*PS	82	Introduction to Statistics	3
			18

Fourth Semester

Course	No.		Certificate Units
PS	69	Numerical Analysis II	3
*IT	72	Systems Development and Design	4
IT	92	Computer Field Project	2
*GN	60	Economics	3
		Technical Electives	3
			15

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* Courses common to both scientific and business data processing curricula.

SPECIALIZED SERVICE PROGRAMS

The Division of Applied Technology cooperates with individual industries or communities in the development and operation of specialized training programs. Such programs normally operate on a regular fee basis but frequently are organized at the request of a particular industry or on a contract basis.

Since such specialized service programs are usually restricted to a single location and serve a special need, they are not described in this general catalog and may differ to some extent in entrance requirements, fees, advanced standing provision, and other details from the general fields of study described in this catalog. Included in these specialized programs are industrial programs in cooperation with local industry primarily designed for up-grading technician employees.

Attention is directed to those courses with numbers below 100 on the following pages.

Inquiries should be directed to the director of the nearest University Center or to the dean of university extension, Purdue University, Lafayette, Indiana.

FLIGHT INSTRUCTION COURSES

Offered: Lafayette Campus only.

The Department of Aviation Technology offers a total of 21 flight and support ground courses on the Purdue campus. These courses are for election by any student in the University, including special students, with the approval of his or her adviser and the General Aviation Section. University staff members will be eligible to enroll in these courses. Registration in these courses is subject to limitations imposed by the availability of flight equipment. Registration in the flight courses will be on a first-come, first-served basis.

Physical Examination: Arrangements for a flight physical examination must be made by the beginning student. This examination must be administered by an approved FAA medical examiner. A listing of approved examiners is to be found in the flight instruction office at the Purdue Airport. Students in advanced courses offering flight must possess a second-class medical certificate dated within the preceding 12 calendar months; students in private pilot area courses are required to hold a third-class physical issued within the preceding 24 calendar months. These physical requirements must be accomplished before enrollment.

A flight student receives pre-flight instructions on Cessna 172.

Personal Service Courses (Noncredit)

Course No.		Title	Certificate Units	Enrollment Fee
AT	50	Pilot Refresher	1	$160.00
AT	51	*General Flight Refresher and Orientation	1	155.00
AT	52	*Instrument Pilot Refresher	1	175.00
AT	53	Multi-engine Rating Refresher	1	180.00
AT	54	*Flight Instructor Refresher	1	180.00
AT	55	*Cross Country Refresher	1	165.00
AT	56	*Accelerated Instrument Course	3	415.00
AT	57	*Flight Instructor Course	3	465.00
AT	58	*Multi-Engine Rating Course	1	375.00
AT	59	Link Trainer Flight	1	100.00
AT	60	Accelerated Instrument Academic Course	2	30.00

Undergraduate Courses (Credit)

			Class	Lab.	Cr.	Enrollment Fee	Continuation Fee
AT	143	Private Flight	0	3	1	$150.00	$275.00
AT	148	Commercial Flight I	0	3	1	$150.00	$275.00
AT	243	Commercial Flight II	0	3	1	$150.00	$275.00
AT	248	Commercial Flight III	0	3	1	$150.00	$275.00
AT	341	Instrument Flight	0	3	1	$150.00	$275.00 and $125.00

Flight Support Ground Courses

			Class	Lab.	Cr.	Fee
AT	144	FAA Private Requirements	3	0	3	$45.00
AT	149	FAA Commercial Requirements I	3	0	3	$45.00
AT	244	FAA Commercial Requirements II	3	0	3	$45.00
AT	249	FAA Commercial Requirements III	3	0	3	$45.00
AT	342	FAA Instrument Requirements	3	0	3	$45.00

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* Have supporting noncredit ground school courses.

DEPARTMENT OF INDUSTRIAL EDUCATION

Organization and Purpose

The Department of Industrial Education, which was formerly known as the Industrial Education Curriculum of the School of Science, Education and Humanities, was established on July 1, 1963, as a separate department attached to the office of the Dean of University Extension.

The department offers a variety of programs designed to equip men and women for entrance into career fields that require an intellectual base upon which practical applications of the knowledge gained in the humanities, the sciences, and the technologies depend. Thus, the courses provided offer a combination of theoretical and practical education.

Graduate and undergraduate programs which prepare students for entrance into a variety of careers in business, education, government, and industry are available. Students may elect to pursue an option or major which will lead to the degree of Bachelor of Science in Industrial Education with a specialty in one of the following areas:

1. Applied Technology Teaching (Junior College and Technical Institute Teaching)
2. General Industrial Activity
3. Industrial Arts Teaching
4. Industrial Vocational Teaching
5. Training in Industry

Specific information about the areas of specialization and the requirements for earning the degree of Bachelor of Science in Industrial Education will be found in later sections of this bulletin.

What Is Industrial Education?

Industrial education is a term that identifies a variety of activities in which people are prepared for work in the industrial world. Since thousands of different kinds of occupations are found in industry, it is evident that a program of industrial education must be highly diversified if it is to serve adequately the career needs of individuals and the economic needs of society. No one institution can do this whole job; therefore, on the college and university level the instruction is limited to the kinds of education that help to prepare people for careers in the professional occupations in this field. The current areas of specialization offered at Purdue are explained briefly in the following sections.

Industrial Arts Teaching

Industrial arts, as a subject for study in the public schools, deals with the industrial aspects of our culture, with emphasis upon the tools, materials, processes, and products of contemporary American industry. Problems of industrial production, planning, and marketing are considered from the viewpoints of labor, management, and the consumer. Social problems related to industrial production and to technological change are integral parts of the subject matter of industrial arts. A part of the formal program of general education, industrial arts is most often included in the junior and senior high school curricula.

As a basis for their professional preparation, prospective teachers of industrial arts study a broad core program of general education subjects essential for all teachers. In addition, they develop technical competencies which will enable them to present effective instruction covering a broad range of industrial tools, materials, and processes. As future members of the teaching profession, prospective industrial arts teachers complete a sequence of professional education courses which include study of the American school system, educational psychology, methods of teaching, organization of instructional materials, and student teaching. In addition to this breadth of preparation, the program of industrial arts teacher education at Purdue University offers the individual student an opportunity to acquire a degree of specialization in one or more of the technical subject areas.

Excellent employment opportunities have been consistently available to Purdue graduates in industrial arts teaching. The demand for industrial arts teachers continues to exceed the number of qualified graduates.

Training in Business, Industry, and Government

The training option at Purdue prepares both graduate and undergraduate students to enter industry, business, and government agencies and perform many of the activities involved in the training and development of employees and managers. These include conducting meetings, bringing people into an organization in an orderly manner and orienting them to the company and their job, helping people improve in their day-to-day work activities, and preparing people for advancement and more responsibility.

Training is the process by which information is passed along, skills are developed, and attitudes are formed and modified so that job performance is constantly improved. A training director is essentially the educator in a business or industrial enterprise. His job is to assist and advise the organization which he serves in regard to the educational needs of the people in that organization in order to make the employees and managers more effective and successful in every aspect of their work. The training director plans the entire training program and usually conducts some of the training courses himself. He also trains managers and others in the organization to train. Much training takes place within the company itself, but occasionally a training manager also recommends that employees and managers take advantage of courses and conferences which are offered elsewhere. Many schools, colleges, and management associations offer outstanding courses and welcome participants from business, industry, and government.

In addition to courses which lead to an understanding of industrial processes, the program includes courses in principles and practices in training, organization and administration of training, conference leadership, elements of management, audio-visual aids in training, counseling in industry, organzation of instructional materials, safety, industrial sociology, industrial psychology, and basic methods of industrial training.

Applied Technology Teaching

The scientific and technical revolution which we are currently undergoing has brought into being a great number of new occupations in which the workers are known as *technicians.* The establishment of many of these occupations, which were not in existence a few years ago, has created a demand for teachers in this field. Thus, the Department of Industrial Education is now offering an option, Applied Technology Teaching, designed to prepare students to become instructors of technical subjects in certain post-high school industrial-technical curricula.

Recognizing the wide range of job requirements and responsibilities related to "technical" occupations in the industrial field, as well as the strengths and areas of concentration of this University, the function of the option has been delimited to the preparation of teachers of those technicians who will serve principally as assistants to scientists and engineers in specialties for which Purdue University provides appropriate educational experiences. Degree requirements have, therefore, been established which are in line with the minimum qualifications necessary for effective initial performance in a teaching situation, and which will provide a sound base for optimum professional growth of career teachers in the specialties of chemical, civil, electrical (including electronic), industrial, and mechanical technologies.

A combination of formal training in the technical occupation, work experience, basic teacher education, general studies, and additional technical preparation at an advanced theoretical level has been considered necessary to develop the competencies demanded of the teachers in these rapidly evolving technological specialties. The Applied Technology Teaching option requires a balance of these components within a 143-144 semester-hour program encompassing four years of undergraduate study, together with a minimum of 15 months of work experience in a pertinent job situation.

Only selected graduates from accredited two-year, college level, technician training programs, such as those operated by the Purdue Division of Applied Technology, are eligible for admission to the option. Transfer students are given credit for appropriate courses, satisfactorily completed in the two-year institution, toward the 143-144 semester hour total; it is anticipated that approximately 78 semester hours transfer credit may be applied toward meeting the course requirements for graduation, including general studies, mathematics, science, elective, and technical credits. The primary purpose of the work completed during these first two years is to develop occupational competence in the technical specialty; it also provides the potential instructor with first-hand experience with the nature and organization of the material he will subsequently attempt to teach, as well as with such environmental factors as characteristics and objectives of the student body, teaching facilities, and purposes of post-high school two-year technical institutions.

After entry into the option, in addition to completing the general studies, mathematics, elective, and teaching requirements, about 25 semester hours will be devoted to further study in the area of technical specialization. The courses required for further study will be drawn from the regular undergraduate engineering programs of the University. This additional technical study is considered to be extremely important in the preparation of an individual for a teaching position in technical education. It should increase the student's breadth and depth of knowledge, thus enabling him to understand and teach better the less theoretical content; it will prepare him to cope with future technological developments; it will provide the basis for additional formal education at the undergraduate and/or graduate levels. Completion of the option with sufficiently high grades will qualify students for graduate work in industrial education, with a minor or a double minor in a technical area.*

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* For some civil engineering graduate level courses certain additional undergraduate course prerequisites must be completed.

Six semester hours of student-teaching in a technical institution, junior college, community college, or other post-high school institution which conducts a technical training program are included in the series of prescribed education courses. This requirement enables the student to engage in practice teaching during the first half of his senior year for six weeks in an environment comparable to that in which he will find employment.

General Industrial

Industrial organizations are constantly seeking to employ persons who can exercise leadership in a variety of situations. They want to hire individuals who know how to work with people, who understand the technical phases of production and supervision, and who can get work done efficiently with maximum satisfaction to all concerned. Management recognizes that its most valuable asset is the people it employs; supervisors are the vital link between "top management" and the rest of the employees.

Students who enroll in the General Industrial option are required to complete a number of "core" courses in English, mathematics, physical sciences, social sciences, humanities, and technology. In addition, a number of specialized courses which relate to the kinds of jobs they may expect to hold are provided. Among these are: training of supervisors, industrial safety, production management, work methods and measurement, elements of management, conference leading, industrial sociology, and cost accounting.

Graduates of the General Industrial option find employment in a great variety of industrial occupations. Many of them are given the opportunity to become junior management trainees and ultimately find themselves located as industrial supervisors and production foremen. Others may be employed, after a brief orientation period, as production control specialists, industrial sales representatives, production planners, technical expediters, industrial casualty specialists, quality inspectors, inspection supervisors, maintenance supervisors, and industrial personnel specialists. Opportunities for growth in these and other related occupational fields are great for the person who is well qualified and who applies the knowledge he has gained to the solution of the problems that arise in the course of the daily work.

Industrial Vocational Teaching Option

Industrial vocational teaching, also known as trade and industrial teaching, is a part of the total Indiana program of vocational education. Industrial vocational teachers must be occupationally competent in *one* of the many skilled and technical crafts found in industry in the United States, or they must have had considerable work experience in one or more of the semiskilled industrial occupations. In order to qualify for the vocational teaching certificate, the student must have completed at least three years of work in a craft, skilled trade, or some other type of industrial occupation, plus the general education and the professional education courses that are specified by the Teacher Training and Licensing Commission of the State Board of Education. The plan of study, when completed, entitles the student to a unit trade license which is issued by the Indiana State Board for Vocational Education under the provisions of the Indiana Vocational Education Acts and the various federal laws that provide financial support for the total vocational education program.

A student who is qualified may find employment in a day vocational trade and industrial education program either as a craft or occupational instructor or as a teacher of related subjects. He may, in addition, be called upon to teach apprentices or workers who attend part-time or evening-school classes. Increasingly, demands are made upon the qualified industrial vocational teacher to help unemployed adults to prepare themselves for work in occupations with which they are not familiar and in which there are shortages of trained workers.

Supervision Programs

One of the functions of the Department of Industrial Education is an activity designated as Supervision Programs. This supervisory training service is made available to business and industry on a fee basis, and the various offerings are provided on a noncredit basis. The Supervision Programs operate as a self-supporting and a full-time function.

The objectives of the Supervision Programs are to: (1) stimulate the process of personal and organization development, (2) offer professional training to individuals and groups in order to assist them to meet their defined training needs and objectives, (3) provide service, research, and instruction concerning the functions, principles, and problems in the field of supervision, and (4) assist people in gaining an appreciation and an understanding of the attitudes, knowledge, and skills involved in the field of supervision.

Training consultation is a service available to industry and business through the Supervision Programs as well as various research activities related to industrial training. The programs of instruction, conducted both on the campus and off-campus, are offered on an intensive basis, as part-time (one day per week) programs, and as custom-made personnel development programs which are designed to help meet specific objectives and needs rather than a more general or basic training need.

The Supervision Programs are staffed by certain members of the faculty of the Department of Industrial Education. These staff members each have pertinent work experience, professional preparation, and other particular qualifications as specialists in the career field of industrial training. Certain instructional programs also include presentations by selected resource persons who are employed in business and industry. These resource people supplement the teaching performed by the regular full-time or part-time professional faculty.

Students who are enrolled in the Training in Business, Industry, and Government option, undergraduate and graduate, are given the opportunity to observe the programs while they are being conducted and to assist in the organization and preparation of the instructional materials.

Requirements for Admission

For admission to the freshman class, one must be a graduate of a commissioned high school and present 15 units of credit in high school work. A unit represents the study of any subject with five recitation periods a week for a school year.

The distribution of the prescribed 15 units of credit is the same for all applicants to the Department of Industrial Education, irrespective of option, except as noted on page 59 (*). The units must be distributed as follows:

English	3 units
History or social studies	1 unit
Algebra	1 unit
Plane geometry	1 unit
Laboratory science	1 unit
Additional English, language, mathematics, science, or social studies	3 units
Other high school subjects	5 units
	15 units

College Board Examinations Required

All beginning students are required to take the Scholastic Aptitude Test and Achievement sections of the College Entrance Examination Board. It is recommended that the SAT be taken in December and that the Achievement tests be taken in March. The tests should be taken even though the admissions application has already been filed.

Results of the Achievement tests in English, mathematics, and chemistry are required, except that a student who has not had or is not taking chemistry may substitute the test for the science area which he has studied. Students who have had three years or less of mathematics should take the intermediate mathematics achievement test; those who have had more than three years should take the advanced mathematics test.

If an Indiana applicant ranks in the lower half of his graduating class, his admission status will be determined on the basis of his high school record and results of the College Board tests. Such an applicant may:

1. Be granted unconditional admission.
2. Be admitted on probation.
3. Have his admission postponed or denied.

Out-of-State Applicants

Purdue is a publicly-supported institution of the state of Indiana, and therefore it must give preference to the admission of well-qualified applicants from Indiana. In addition to meeting the subject matter requirements already described, out-of-state applicants, *to be eligible for consideration,* must meet these qualifications:

Out-of-state beginners must rank in the highest quarter (25 per cent) of their high school graduating class or rank in the highest quarter (25 per cent) on the SAT sections of College Entrance Examination Board tests.

Transfer applicants must have a "B" average in work done at previously attended colleges.

From these applicants, the out-of-state roster will be selected, the number to be determined by the space available.

No out-of-state application will be considered or even processed unless it is accompanied by the required $20 out-of-state application fee. This fee is not refundable and may not be applied to fees, tuition, or housing. Make checks payable to Purdue University.

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* Students who wish to enter the Applied Technology Teaching option must be graduates of a two-year technical education program and must have been awarded the associate degree.

Transfer Students

An applicant transferring from another college or university must fulfill the following requirements:

1) Submit an application for admission on the prescribed form through the principal of the high school from which he was graduated.

2) File the application for admission as soon as possible after the *completion of the first semester (second quarter) of college work.*

3) File the application three months prior to expected date of admission.

4) Forward an official transcript of work done in institutions previously attended. A separate transcript must be sent directly from each institution whether or not credit is requested. If the credentials are not sufficiently definite, a personal consultation with the applicant may be necessary.

5) A formal report will be obtained by the director of admissions himself from the dean of men, dean of women, or an authorized official in the school last attended.

6) Nonresidents must pay the $20 out-of-state application fee.

7) An average of at least "C" for Indiana applicants and "B" for out-of-state applicants for all courses previously taken at a recognized college or university is required.

Temporary Students

Persons who wish to receive instruction offered in any of the departments of the University without undertaking one of the regular plans of study and without becoming candidates for degrees may be admitted as temporary students. Such students must present satisfactory evidence that they are prepared to take the work desired. Application for admission as a temporary student should be made to the director of admissions.

Procedure for Making Application

All inquiries regarding admission should be addressed to: Director of Admissions, Purdue University, Lafayette, Indiana. The first letter of inquiry concerning admission should include:

(a) The amount of school training completed
(b) Plans for further education, indicating field or specialization
(c) The approximate date to enter Purdue
(d) A request for information concerning admission requirements
(e) A request for application form

A personal visit to the University for a conference with an admissions counselor is always desirable and helps a prospective student evaluate his preparation and plans for further education. It also affords an opportunity to give additional information and explanations that apply to the individul case. Such a visit and conference are especially appropriate at the beginning of or during the junior year in high school.

Students who wish to begin their university studies at one of the University Centers should contact the admissions officer at the Center instead of writing the Lafayette campus.

The Application

The application for admission must be made on the official form provided by the University. The applicant and his family should complete Parts I, II, III, and IV of the application for admission and then submit it to his high school principal who should complete Part V and the transcript of the high school record. The principal forwards the entire application to the Office of Admissions, Purdue University, Lafayette, Indiana.

Those who apply after completing *six* semesters of high school work should request the high school principal to include on the transcript of record the courses in progress for the seventh semester *and* those planned for the eighth semester. Those who apply after *seven* semesters should request the principal to record the grades for the entire seven semesters *and* include the courses in progress for the eighth semester. *Failure to have the transcript so prepared will delay processing the application.*

The physical examination report should be completed by the family physician and forwarded by him directly to the Student Health Center, Purdue University, Lafayette, Indiana.

Qualified applicants, entering directly from high school, are encouraged to file their application for admission as soon as possible after October 1, or after completing six semesters of high school work. Indiana residents *must* file their application prior to June 15, while applicants from out-of-state must file prior to April 15.

Orientation and Summer Registration

All new students are required to participate in the program of orientation. To accomplish this, they come to the campus during a designated period in the summer. At this time they have a conference with an academic adviser and carry out their part of registration.

In the conference with the adviser, the specific program of courses for the fall semester is determined. Following this, the Univeristy completes the process of registration for the student.

New students who have not thus registered during the summer must assemble at the University a few days before those who have done so, in order to carry out this part of the orientation program and complete the registration process.

The remainder of the orientation program takes place during the two or three days before classes begin. In this part of the program, the students are given information on University organization and procedure and a further opportunity to consult with members of the staff. It is the desire of the University to give students every opportunity to succeed in their work, and the orientation plan is one means of giving this help to those who are new to the Purdue campus.

Minimum Costs

The expense of a year's work at Purdue University will depend a great deal upon how much a student can and wants to spend. Prices are subject to change without published notice. Basic minimum costs for an Indiana resident for a two-semester school year are:

Items	Estimated Cost
University fees (approximately)	$ 330
Military uniform deposits for two years	20
Books and supplies	100
Board and room	860
Total	$1310

If a student is not a resident of the State of Indiana, he will be charged an additional tuition fee of $310 a semester or $620 a year.

University fees include the general service, student activity, recreation facilities, and infirmary and medical fees. The medical fee covers the services of the University physicians, nurses, and infirmary. Students are admitted to athletic events and the convocation series without charge.

Incidental expenses include such items as clothing, transportation, telephone, newspapers and magazines, dry cleaning and laundry, movies, haircuts, etc.

Financial Aid

Purdue University offers a number of scholarships. Scholarships are granted on the bases of demonstrated scholastic ability and financial need. In the case of students who have spent one or more semesters at the University, a grade-point index of 4.5 is required for most scholarships. Persons not yet enrolled in the University may qualify by taking prescribed standard tests.

Further information will be found in the bulletin, *Financial Aid for Students.* Inquiries concerning scholarships and requests for application forms should be addressed to the Director, Office of Undergraduate Scholarships, Purdue University, Lafayette, Indiana.

Through legislation by the federal government and through the generosity of friends, loan funds have been established to aid needy and deserving students. Applicants are required to have a creditable scholastic record.

Living Accommodations

Purdue students may find living accommodations in University residence halls, fraternities and sororities, cooperatives, and private homes. Application for housing is made on a separate form and in addition to application for admission to the University. Acceptance for admission does not guarantee housing. *Two separate applications are required.*

Men's Residence Halls

The Men's Quadrangle, Harrison Courts, State Street Courts and Fowler House, Gable Courts, Men's Residence H-1, Men's Residence H-2, Men's Residence H-3, and Men's Residence H-4 provide a variety of comfortable living accommodations for approximately 5,950 single undergraduate men students. The Men's Quadrangle and Men's Residences H-1, H-2, H-3, and H-4 are traditional-type residence halls of brick and stone, modern in every respect with comfortable lounges and fully-equipped dining rooms and kitchens. The Harrison and State Street courts are one-story units which provide for small groupings of 20 men within a "court" of 100 students each. Fowler House, adjacent to the State Street Courts, provides kitchen and dining room facilities for students living in the State Street Courts as well as room accommodations for 47 students. The Gable Courts follow the design and layout of the original "courts."

The current cost of accommodations in the halls varies from $790 to a maximum of $885 for room and board for two semesters in the Men's Quadrangle and Men's Residence Halls H-1, H-2, H-3, and H-4, the State Street and Gable Courts, and Fowler House. (Rates quoted are subject to change.)

Women' Residence Halls

Located three blocks from the campus, University-operated residence facilities for women students provide comfortable and attractive living accommodations. Seven halls, housing approximately 2,250 co-eds, are modern buildings equipped and furnished to meet the discriminating tastes and many needs of university women. Duhme, Shealy, Wood, Warren, and Vawter comprise the original group of women's halls. Each hall contains generous lounge space, recreation room, shampoo room, dining room, and kitchen, with a branch post office serving all five halls. Newest of the halls for women are Hall X, which accommodates 600 residents, and H-8 (scheduled for completion September 1964), which houses 800 girls. Of modern design and decor, these halls are comparable to the other women's halls.

The cost of room and board for two semesters varies from $790 to a maximum of $885. There is telephone service to each room, the charge being included in the cost of board and room. All rates are subject to revision as required by costs of operation and upon approval by the Board of Trustees.

Married Student Apartments

Furnished and unfurnished apartments are available. Rent, which includes utilities, ranges from $81 to $92 per month for unfurnished accommodations, and from $73 to $94 per month for the furnished apartments.

Placement Services

Three placement offices on the campus are available to students: Placement Service for Men, Placement Service for Women, and Teacher Placement.

The first two services maintain contacts with a large number of firms in the industrial and business world. They provide facilities for informing students of employment possibilities and for arranging personal interviews with company representatives.

The Office of Teacher Placement provides information about teaching, administrative, and supervisory positions in public and private schools and in colleges. Constant effort is made to seek professional advancement for graduates of the University who have demonstrated their interest and proficiency in the teaching profession.

Advisers to Students

One of the major advantages of enrolling in the Department of Industrial Education is the relatively small enrollment with the consequent opportunity to seek advice and counsel from individual staff members. All of the members of the instructional staff are available, at frequent intervals, for discussion of student problems and for information about plans of study, job opportunities, and the like. Guidance and counsel about the specific options may be obtained from the following:

Industrial Arts Teaching	J. J. Carrel and D. L. Householder
Industrial Vocational Teaching	C. E. Highlen and W. B. Hill
Applied Technology Teaching	A. S. Drew
Training in Industry	L. F. Greenberger and T. F. Hull
General Industrial	Harry S. Belman

Student Organizations

Associated with the Department of Industrial Education are three student organizations. These are Mu Chapter of Iota Lambda Sigma, honorary industrial education fraternity; the Purdue University Chapter of the American Society of

Training Directors; the Industrial Education Club. The first two are affiliates of national organizations with chapters in all sections of the United States.

Students are chosen for membership in Iota Lambda Sigma on the basis of scholastic achievement, sound character, and demonstrated potentiality for leadership in the field of industrial education. This national organization is made up of college and university students plus persons who are engaged in teaching, research, supervision, and administration in some phase of industrial education.

The Purdue University Chapter of the American Society of Training Directors is the first and the largest of the student organizations that are affiliated with this national professional society. Among its major aims are those of bringing students and practitioners closer together; obtaining and exchanging information about current training experiences, ideas, and methods; stimulating and maintaining interest in effective, organized training in business, industry, and government. All industrial education students are eligible for membership in this chapter.

The Industrial Education Club was established in 1959 as the result of an expressed desire on the part of students and staff members for an organization which would provide a common organization open to all students enrolled in the Department of Industrial Education. It brings together the students and faculty on a social basis and provides a medium for the development of greater understanding of the nature of industrial education, offers an opportunity to promote the interests of this field, and gives students the chance to obtain leadership training.

Military Training

Purdue University, being a land-grant college, requires all able-bodied male students to take two years of military training (Basic Course). Advanced military training (Advanced Course), offered during the last two years, is optional. Basic and advanced ROTC programs in Army, Navy, and Air Force are offered at Purdue University. Band may be used as a substitute for both basic and advanced ROTC.

Students in advanced Army ROTC elect Chemical Corps, Corps of Engineers, Ordnance Corps, Signal Corps, Transportation Corps, or Artillery at the beginning of their fifth semester. Recommended units for the several engineering schools are as follows: Chemical Corps (chemical and metallurgical engineers), Corps of Engineers (civil engineers). Ordnance Corps (mechanical and metallurgical engineers), Signal Corps (electrical engineers and amateur radio operators), Artillery (any school), and Transportation Corps (any school).

Students accepted for Naval ROTC (open to students in any curricula, except Pharmacy, which leads to a baccalaureate degree with four years' residence on the campus) either as regular or contract students must carry this program for four years. The first two years satisfy the military training requirements of the University and the last two years are advanced military training.

Students enrolled in the Air Force ROTC receive a nonspecialized course covering the fundamentals of Air Force operation. The Basic Course (freshman and sophomore) gives the student a general understanding of the Air Force and its place in national defense. The Advanced Course (junior and senior) covers the detailed operations of the Air Force, including strategy and related subjects useful in the training of future Air Force officers.

Special Facilities

Libraries

The University Libraries offer in all some 620,000 volumes housed in the General Library located in the new Memorial Center, in 20 departmental or special libraries, and in several deposit collections. Over 12,000 periodicals are regularly received, while the serial publications of societies, institutions, and state and federal governments bring the number of such receipts to over 15,000 titles. The libraries are a depository of long standing for both federal and state government publications.

The University has a long tradition of strong departmental libraries, and some 350,000 volumes are shelved in various buildings around the campus. These libraries in general hold the long bound sets of journals in each field, books in foreign languages, advanced treatises, and the special bibliographies and services needed for carrying on advanced research in the various subjects.

Audio-Visual Center

The Audio-Visual Center located in the new Memorial Center (ground floor and basement) makes available to students and staff the teaching aids of many types now becoming standard: visual aids, such as the various kinds of films, and audio aids, such as tape and other recordings, as well as combinations. The AV Center affords an advisory and demonstration service for these aids. It operates a Film Library which loans its own collection of 2,000 prints and borrows aids from all over the United States for local showing, reaching an annual audience of 500,000.

Technical and Applied Arts

The Department of Technical and Applied Arts operates a series of laboratories and industrial-technical shops which have been specially designed for instruction of the students in the Department of Industrial Education. These modern and up-to-date facilities offer opportunities to students to become familiar with industrial processes, equipment and materials and also to acquire a degree of proficiency in the operation and handling of these items. The presence of facilities of this kind on the campus of Purdue University assures the student of receiving a completely rounded education and preparation for any one of the options that is offered in the curriculum.

Graduate Study in Industrial Education

Graduate programs in industrial education are offered to further the professional development of selected industrial education teachers, industrial trainers and other qualified individuals; one of the major aims is to produce leaders who are competent to plan, organize, supervise, or direct education and training programs in educational institutions, businesses, governmental agencies, and industries. Another prime objective is that of helping people to become scholars and research specialists in this field. Graduate plans of study may be designed which relate to a broad array of vocational objectives and options, depending upon the particular interests and background of the candidate.

The Department of Industrial Education provides courses and directs research leading to the Master of Science and to the Ph.D. degrees. Special programs of graduate study may be designed for persons who do not have an advanced degree objective but who are concerned about improving their professional qualifications or meeting advanced certification requirements.

Admission to the Graduate School may be granted to graduates of Purdue University or of any other accredited institution. Persons accepted to do advanced study in industrial education must present adequate undergraduate preparation and experience to make graduate study a profitable undertaking.

Persons interested in specific information about advanced work in industrial education are invited to contact the Department of Industrial Education directly. Further information about graduate study, application blanks, and the bulletin of the school may be obtained by writing to the Dean of the Graduate School, Graduate House, Purdue University, Lafayette, Indiana.

Graduation Requirements

Degree Requirements

All of the options leading to the degree of Bachelor of Science in Industrial Education have certain requirements in common.

A. Satisfaction of the general University requirements in military training and physical education;

B. Satisfaction of the minimum scholastic index requirement as established by the faculty.

C. The general University requirements for residence, payment of diploma fee, attendance at commencement exercises, etc. For further details about these requirements, see the *General Information Bulletin.*

Core Requirements

All of the students are required to take a certain number of courses which are the same. These "core requirements" form a sound, basic program for those people who are interested in earning the degree of Bachelor of Science in Industrial Education.

ED 260 or IED 260	3 hours
English Composition (ENGL 101, 102)	6 hours
Developmental Reading (ENGL 185)	1 hour
Grammar and Usage (ENGL 425)	3 hours
Speech (SPE 114)	3 hours
Psychology (PSY 120, ED 285)	6 hours
Philosophy (PHIL 210)	3 hours
Social Science (HIST 252, GVMT 101, ECON 210, SOC 100)	12 hours
Mathematics (MA 111 and 112 or 123 and 124)	6 hours
Chemistry (CHM 113, 114)	6 hours
Physics (PHYS 220, 221)	8 hours
Technical and Applied Arts (TAA 115, 117, 215, 212)	8 hours
Drafting (EG 114, 115)	4 hours

Plans of Study

Each student's program for the four years will be based on the option which he has selected. Modifications may be made from time to time to fit individual needs, but in the main the plans of study outlined below will apply in each case.

Purdue University has been designated by the State Board for Vocational Education as a teacher-training institution in vocational trade and industrial education in accordance with the provisions of the federal Smith-Hughes and George-Barden laws. The four-year curriculum in industrial education fulfills the professional training requirements specified by the Indiana State Teacher Training and Licensing Commission for teaching licenses in the field of industrial education.

In order to qualify for the degree of Bachelor of Science in Industrial Education the student must:

A. Complete the curriculum requirements in industrial education as listed in the plan of study below, with a selection of electives appropriate to a major area of specialization.

B. Complete at least 143 semester hours of credit.

C. Present evidence of industrial work experience or the equivalent gained while completing required course work. The work experience is recommended in order that the student may be better qualified for employment, and it must be in conformity with standards established by the staff of the industrial education curriculum. Work experience gained prior to starting college may be counted, subject to approval by the staff.

APPLIED TECHNOLOGY TEACHING

Due to the many changes that are taking place in this option and the complexity of the program, it has been decided to provide a separate bulletin which explains in considerable detail the kinds of courses that the student must take and the number of credit courses completed in the Division of Applied Technology that will be accepted for transfer.

VOCATIONAL INDUSTRIAL TEACHING

No plan of study is included for the Vocational Industrial Teaching Option since the determination of courses which a student should take in addition to the core requirements will depend very largely upon his background of education and experience and his degree objective.

INDUSTRIAL ARTS TEACHING

FRESHMAN YEAR

First Semester

(2) EG 114 (Drafting I)
(3) ENGL 101 (English Composition I)
(1) ENGL 185 (Developmental Reading)
(3) GVMT 101 (Introduction to Government)
(2) TAA 115 (General Metals)
(3) MA 111 (Algebra)
*(1)
(2) Military (110) or Physical Education

17

Second Semester

(2) EG 115 (Drafting II)
(2) TAA 117 (General Woodworking)
(2) TAA 215 (Welding)
(3) MA 112 (Trigonometry)
(3) SOC 100 (Introduction to Sociology)
(3) SPE 114 (Principles of Speech)
(2) Military (120) or Physical Education

17

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* See note on page 67.

SOPHOMORE YEAR

Third Semester

(3) CHM 113 (General Chemistry)
*(3)
(3) ENGL 202 (English Composition II)
(2) TAA 225 (Introductory Metal Machining)
(3) PSY 120 (Elementary Psychology)
(3) TAA 212 (Electricity Fundamentals)
(2-1) Military (230) or Physical Education

19-18

Fourth Semester

(3) CHM 112 (General Chemistry)
(3) ECON 210 (Principles of Economics)
(3) EDUC 285 (Education Psychology)
(3) HIST 252 (U.S. in World Affairs)
(2) TAA 224 (Graphic Arts Fundamentals)
(2-1) Military (240) or Physical Education
(2-3) Electives

18

JUNIOR YEAR

Fifth Semester

(2) TAA 322 (Electrical Circuits)
(2) TAA 316 (Introduction to Power Mechanics)
(3) PHIL 210 (Introduction to Philosophy)
(4) PHYS 220 (General Physics)
*(3)
(5) Electives

19

Sixth Semester

(3) ENGL 425 (Grammar and Usage)
(2) TAA 423 (Electronics Fundamentals)
(2) TAA 327 (Machine Woodworking)
(2) TAA 324 (Offset Lithography)
(4) PHYS 221 (General Physics)
(6) Electives

19

SENIOR YEAR

Professional Semester

(2) EDUC 460 (Special Methods of Teaching)
(6) EDUC 464 (Supervised Teaching)
(2) EDUC 469 (Organization of Instructional Materials)
(2) EDUC 304 (Principles of Teaching)
(3) EDUC 502 (American School System)

15

Seventh or Eighth Semester

(3) TAA 481 (Comprehensive General Shop)
(3) EDUC 501 (Preparation of Instructional Materials)
*(3)
(2) TAA 416 (Internal Combustion Engines)
(6) Electives

17

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* A course required by the teacher training and licensing commission of the Indiana State Board of Education will be established prior to the beginning of the 1964-65 academic year.

GENERAL INDUSTRIAL

FRESHMAN YEAR

First Semester

(2)	EG 114 (Drafting I)
(3)	ENGL 101 (English Composition I)
(1)	ENGL 185 (Developmental Reading)
(3)	GVMT 101 (Introduction to Government)
(3)	MA 111 (Algebra)
(2)	TAA 115 (General Metals)
(2)	TAA 117 (General Woodworking)
(2-1)	Military (110) or Physical Education
18-17	

Second Semester

(2)	EG 115 (Drafting II)
(3)	MA 112 (Trigonometry)
(3)	PSY 120 (Elementary Psychology)
(3)	SOC 100 (Introduction to Sociology)
(3)	SPE 114 (Principles of Speech)
(2)	TAA 215 (Welding)
(2)	Military (120) or Physical Education
18	

SOPHOMORE YEAR

Third Semester

(2)	EG 210 (Industrial Sketching)
(3)	CHM 113 (Introductory Chemistry)
(3)	ENGL 202 (English Composition II)
(3)	HIST 252 (U.S. in World Affairs)
(3)	IED 260 (Principles and Objectives of Industrial Education)
(2)	TAA 335 (Industrial Machine processes)
(2-1)	Military (230) or Physical Education
18-17	

Fourth Semester

(3)	CHM 114 (Introductory Chemistry)
(3)	ECON 210 (Principles of Economics)
(3)	EDUC 285 (Educational Psychology)
(3)	IED 374 (Training of Supervisors)
(3)	INDM 200 (Introductory Accounting)
(2)	TAA 355 (Industrial Application of Metal Machining)
(2-1)	Military (240) or Physical Education
19-18	

JUNIOR YEAR

Fifth Semester

(3)	IE 366 (Production Management)
(3)	INDM 201 (Cost Accounting)
(2)	TAA 212 (Electricity Fundamentals)
(3)	TAA 331 (Industrial Safety)
(3)	PHIL 210 (Introduction to Philosophy)
(4)	PHYS 220 (General Physics)
18	

Sixth Semester

(3)	ENGL 425 (Grammar and Usage)
(3)	IED 375 (Basic Methods of Training)
(4)	PHYS 221 (General Physics)
(3)	PSY 370 (Psychology in Business and Industry)
(2)	TAA 433 (Electronics Fundamentals)
(2)	Elective
17	

SENIOR YEAR

Seventh Semester

(3) ECON 450 (Labor Problems)
(3) IE 477 (Work Methods and Measurements)
(3) IED 574 (Principles and Practices of Industrial Training)
(3) INDM 480 (Elements of Management)
(3) SPE 325 (Business and Professional Interview)
(2) Elective

17

Eighth Semester

(3) ED 516 (Counseling in Industry)
(3) ENGL 420 or 421 (Business Letter Writing)
(3) IED 474 (Conference Leadership)
(3) SOC 516 (Industrial Sociology)
(3) Elective
(3) Elective

18

INDUSTRIAL TRAINING

FRESHMAN YEAR

First Semester

(2) EG 114 (Drafting I)
(3) ENGL 101 (English Composition I)
(1) ENGL 185 (Developmental Reading)
(3) GVMT 101 (Introduction to Government)
(3) MA 111 (Algebra)
(2) TAA 115 (General Metals)
(2) TAA 117 (General Woodworking)
(2-1) Military (110) or Physical Education

18-17

Second Semester

(2) EG 115 (Drafting II)
(3) MA 112 (Trigonometry)
(3) PSY 120 (Elementary Psychology)
(3) SOC 100 (Introduction to Sociology)
(3) SPE 114 (Principles of Speech)
(2) TAA 215 (Welding) cation
(2) Military (120) or Physical Edution

18

SOPHOMORE YEAR

Third Semester

(2) EG 210 (Industrial Sketching)
(3) CHM 113 (Introductory Chemistry)
(3) ENGL 202 (English Composition II)
(3) HIST 252 (U. S. and World Affairs)
(3) IED 260 (Principles and Objectives of Industrial Education)
(2) TAA 335 (Industrial Machine Processes)
(2-1) Military (230) or Physical Education

18-17

Fourth Semester

(3) CHM 114 (Introductory Chemistry)
(3) ECON 210 (Principles of Economics)
(3) EDUC 285 (Educational Psychology)
(3) IED 374 (Training of Supervisors)
(3) INDM 200 (Introductory Accounting)
(2-1) Military (240) or Physical Education

17-16

JUNIOR YEAR

Fifth Semester

(3)	IED 375 (Basic Methods of Training)
(3)	PHIL 210 (Introduction to Philosophy)
(4)	PHYS 220 (General Physics)
(3)	SPE 325 (Business and Professional Interview)
(2)	TAA 212 (Electricity Fundamentals)
(3)	TAA 331 (Industrial Safety)
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18	

Sixth Semester

(3)	ENGL 425 (Grammar and Usage)
(3)	IE 477 (Work Methods and Measurements)
(4)	PHYS 221 (General Physics)
(3)	PSY 370 (Psychology in Business and Industry)
(2)	TAA 433 (Electronics Fundamentals)
(3)	Elective
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18	

SENIOR YEAR

Seventh Semester

(3)	ECON 450 (Labor Problems)
(3)	EDUC 501 (Preparation of Instructional Materials)
(3)	IED 510 (Course Construction)
(3)	IED 574 (Principles and Practices of Industrial Training)
(3)	INDM 480 (Elements of Industrial Management)
(3)	Elective
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18	

Eighth Semester

(3)	EDUC 516 (Counseling in Industry)
(3)	IED 474 (Conference Leadership)
(3)	IED 564 (Tests and Measurements in Industrial Education)
(3)	IED 577 (Organization and Administration of Industrial Training)
(3)	SOC 516 (Industrial Sociology)
(3)	Elective
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18	

DESCRIPTION OF COURSES

Courses listed on the following pages will, for the most part, be offered during the academic year 1964-65. It is possible that new courses may be added, some courses presently offered may be eliminated, and still others may be modified in content, combined with others, or revised in some other manner. Counselors should be consulted about curriculum developments, course requirements, and the like by the student when he proceeds to make his program for each succeeding semester.

In many cases the session in which a course will be offered is indicated thus: Sem. 1, Sem. 2, or SS (summer session). In some cases, it is impossible to specify in advance whether or not a course will be offered in any given session. Information on this point may be obtained from the head of the department or the appropriate counselor.

For each course in applied technology the description should be interpreted as follows: first, the official number of the course; second, its special title; and third, the number of class, laboratory, and credit hours. For example,

BC 288. ELEMENTARY SURVEYING. Class 1, Lab. 3, cr. 2.

indicates that BC 288 is Elementary Surveying, meets one hour in class and three hours in laboratory per week, and gives two semester hours credit.

Applied Technology courses numbered from:

0-99	special service courses primarily for adults working for a certificate or toward job improvement.
100-199	primarily for freshmen working toward an associate degree.
200-299	primarily for sophomores working toward an associate degree.
300-399	primarily for students with diplomas doing additional work to meet job requirements.

Industrial education course descriptions should be interpreted as follows: first, the official number of the course; second, its special title; third, the semester(s) in which it is offered; fourth, the number of hours a week of recitation, laboratory, or practice, and credit hours. A typical listing:

260. PRINCIPLES AND OBJECTIVES OF INDUSTRIAL EDUCATION. Semester 1 and 2. Class 3, Cr. 3 (4 IED).

Industrial education course numbers indicate the following:

100-299	lower-division courses normally scheduled for freshmen and sophomores.
300-499	upper-division courses normally scheduled for juniors and seniors.
500-599	dual-level courses that may be scheduled by juniors and seniors, and by graduate students for graduate credit.

Course descriptions of graduate-level courses (600 series) will be found in the *Graduate School Bulletin.*

DEPARTMENT OF AVIATION TECHNOLOGY

Professor Maris in charge

Assistant Professors: Duncan Blatchley, Treager, Toth.

Instructors: Haubl, Holleman, Kemp, McCormick, Neher, Smith, Kitely, Townsend, Marchand, Vorbeck, Wilson.

Lecturer: Collins.

PERSONAL SERVICE COURSES

AT 50. PILOT REFRESHER. cert. units 1. Open only to FAA certified pilots or preceded by AT 143.

A flight course consisting of three hours of dual instruction, and seven hours of solo flight to include *no* cross country flight.

AT 51. GENERAL FLIGHT REFRESHER AND ORIENTATION. cert. units 1. No entrance requirements.

A flight course designed for the non-pilot to orientate teachers and others in the development of aviation flight. Eight hours dual instruction and ten hours of classroom discussion.

AT 52. INSTRUMENT PILOT REFRESHER. cert. units 1. Open only to FAA certificated pilots who hold commercial certificates or private pilot certificates with 200 hours pilot in command flight experience.

A flight course designed for the instrument rated pilot or the pilot who has nearly completed instrument training and requires a nominal amount of instruction for its completion. Eight hours dual and two solo hours.

AT 53. MULTI-ENGINE RATING REFRESHER. cert. units 1. Open only to FAA certificated pilots who hold multi-engine ratings.

Consists of five hours dual flight instruction and designed to refamiliarize the multi-engine rated pilot with multi-engine techniques.

AT 54. FLIGHT INSTRUCTOR REFRESHER. cert. units 1. Open only to FAA certificated pilots who hold commercial certificates or private pilot certificates with 200 hours pilot in command flight experience.

A course consisting of seven hours of dual, three hours of solo, and 10 hours of classroom instruction, which is designed to certificate the nearly completed pilot or to refresh the already certificated pilot in the techniques of flight instruction.

AT 55. CROSS COUNTRY REFRESHER. cert. units 1. Must be preceded by AT 143 or open to FAA certificated pilots.

A course consisting of four hours dual, six hours solo and five hours classroom discussion designed to increase cross country flight techniques or to enable the pilot to retain already learned skills.

AT 56. ACCELERATED INSTRUMENT COURSE. cert. units 3. Open only to FAA certificated commercial pilots or private pilots with 200 hours pilot in command experience.

A lesser course than AT 351, consisting of 20 hours dual, 10 hours link, and 30 hours classroom instruction, to be offered those certificated pilots who have had some instrument training and require an accelerated type of course to qualify for an instrument rating.

AT 57. FLIGHT INSTRUCTOR COURSE. cert. units 3. Open only to FAA certificated commercial pilots or private pilots with 200 hours pilot in command experience.

A course consisting of 20 hours dual, five hours solo, and 40 hours classroom instruction, to qualify a commercially certificated pilot for a flight instructor rating.

AT 58. MULTI-ENGINE RATING COURSE. cert. units 1. Open only to FAA certificated pilots.

A course consisting of 10 hours dual and 15 hours classroom instruction, to qualify a commercial (or a private pilot with adequate previous experience) for a multi-engine aircraft rating.

AT. 59. LINK TRAINER FLIGHT. cert. units 1. Open to all grades of pilot certificate holders. A course in the link synthetic flight trainer consisting of 10 hours of supervised instruction.

AT 60. ACCELERATED INSTRUMENT ACADEMICS. cert. units 2.

Open to all grades of pilot certificate holders. A course in the academic area of instrument flight techniques consisting of 36 hours of classroom instruction in instrument rating fundamentals.

Training stresses the practical application of aircraft maintenance.

UNDERGRADUATE LEVEL

Lower-Division Courses

AT 111. AIRCRAFT WELDING AND MATERIALS. Class 1, Lab. 3, cr. 2.

Welding practices applied to aircraft materials; alloys of steel, aluminum, magnesium, and nickel.

AT 112. AIRCRAFT ENGINES I. Class 3, Lab. 6, cr. 5.

Fundamental principles of aircraft engines, including engine theory, materials and methods of construction, lubricants and lubrication systems, induction systems and superchargers, engine installation and run-up, disassembly and inspection of various types of aircraft engines.

AT 113. FEDERAL AIR REGULATIONS AND FORMS. Class 2, Lab. 0, cr. 2.

Familiarization with federal air regulations governing safe practices in maintenance and inspection of airframes and power plants will be given. Repeated practice in the completion of the forms required to report on maintenance and inspection practices will be accomplished.

AT 114. AIRCRAFT ENGINE ACCESSORIES. Class 3, Lab. 6, cr. 5.

Fundamental principles of aircraft engine accessories, including theoretical and practical work on float and pressure injection carburetors, fuel injection systems, magnetos and ignition systems, generators and generator control systems.

AT 115. AIRCRAFT FABRICATION. Class 3, Lab. 6, cr. 5.

Aircraft fabrication practices, application and use of hand and machine sheet metal tools, preparation, forming, fastening, and assembly of various airframe materials.

AT 116. AIRFRAME MAINTENANCE I. Class 3, Lab. 6, cr. 5.

Principles and methods of light aircraft inspection, maintenance and repair of airframes, including fabric and finishing methods, and assembly and rigging. Laboratory work includes rebuilding and return to service of a typical light aircraft.

AT 120. METEOROLOGY. Class 3, cr. 3.

Basic meteorology course for pilots. Discussion of weather principles and their application to aviation weather reports and forecasts used for flight planning. Emphasis is placed on those areas of particular interest to the pilot, such as fog, aircraft icing, turbulence, and use of airborne weather radar.

AT 121. AIRCRAFT ENGINES. Class 3, cr. 3.

Fundamental principles of aircraft engines, including engine theory, materials and methods of construction, lubricants and lubrication systems, induction systems and superchargers. General engine operating procedures, cruise control, and performance diagnosis.

AT 122. AIRWAYS PROCEDURES I. Class 2, Lab. 3, cr. 3.

Introduction to basic instrument flying and radio procedures. Discusses both partial panel and attitude instrument flight systems, theory and proper use of both visual and aural radio aids and instrumentation. Studies proper procedures for departure, enroute flying, holding, let down, and approaches. Use of proper voice procedures is emphasized along with use of necessary publications. Practical experience in all areas is provided in synthetic flight trainers.

AT 123. AIRLINE OPERATIONS. Class 1, cr. 1.

Discussion of airline history, organization, equipment, operating costs, and revenues, aircraft utilization, aircraft maintenance and engineering, passenger and cargo operations.

AT 124. NAVIGATION I. Class 2, cr. 2.

A study of basic navigation beginning with theory and fundamentals and progressing through advanced problems in dead reckoning. Computer skill will be developed in problems involving rate, time, distance, fuel consumption, wind vector, and radius of action problems.

AT 125. AERONAUTICS. Class 2, cr. 2.

Course in aeronautics designed to cover basic material such as aircraft types, aerodynamics, theory of flight, airplane structures, aviation physiology, flying higher performance aircraft, helicopters, and airports.

AT 126. REGULATIONS AND FLIGHT PLANNING I. Class 1, cr. 1.

A study of the federal air regulations governing pilot certificates, physical requirements, general operation of aircraft, air traffic regulations, and notification and reporting of aircraft accidents and reporting of overdue aircraft. A general study of weight and balance computations necessary for flight planning will be conducted.

AT 127. NAVIGATION II. Class 2, cr. 2. Must be preceded by AT 124.

A continuation of the study of dead reckoning, as well as a study of the principles and techniques of navigation by electronic, celestial, and pressure pattern methods.

AT 128. AIRCRAFT SYSTEMS AND COMPONENTS. Class 3, cr. 3. Must be preceded by AT 121.

A study of aircraft design and construction including components and systems with application to the DC-3 aircraft in particular.

Emphasis will be directed to basic maintenance of aircraft systems and components, and servicing methods and precautions in partial fulfillment of flight engineer requirements.

AT 129. AIRWAYS PROCEDURES II. Class 3, Lab. 3, cr. 4.

Continuation of and must be preceded by AT 122.

Emphasis is placed on advanced types of radio navigation and voice procedures.

AT 130. REGULATIONS AND FLIGHT PLANNING II. Class 2, cr. 2. Continuation of and must be preceded by AT 126.

Emphasis is placed on those federal regulations governing scheduled domestic, scheduled international, and irregular air carrier operations. Federal regulations pertinent to the airline transport pilot's rating and flight engineer's rating and appropriate forms of the Purdue Aeronautics Corporation are discussed.

AT 131. AIRCRAFT ELECTRICITY. Class 3, cr. 3.

A study of the relationships of current, magnetism, and voltage in simple closed circuits, stressing DC circuitry and its applications in aviation systems.

AT 132. ELECTRONICS I. Class 3, cr. 3.

Covers applications of Kirchoff's Laws to closed networks, discusses diodes, amplification of current, and gives a brief introduction to reactances.

AT 133. AIRCRAFT AC ELECTRICITY. Class 3, cr. 3. Must be preceded by AT 131.

Studies circuits with an applied alternating emf., phase relationships, reactances, and impedances. Considers modern aviation electrical systems utilizing 400 cps alternating voltage.

AT 134. ELECTRONICS II. Class 3, cr. 3. Must be preceded by AT 132.

Discusses impedance and resonance in RF circuits; covers circuit coupling, filter networks, and RF amplification. Contains a brief introduction to UHF circuits.

AT 135. AVIONICS LABORATORY I. Lab. 6, cr. 2. To be taken concurrently with AT 131 and AT 132.

Demonstrates applications of Kirchoff's Laws in DC circuits, involves construction of power supplies and studies power loss in circuits; shows relationships of magnetic flux and electric current.

AT 136. AVIONICS LABORATORY II. Lab 6, cr. 2. To be taken concurrently with AT 133 and AT 134.

Demonstrates reactance and impedance in RF circuits; involves the construction of oscillators; coupled circuits, cascaded amplifiers, and triode operated devices.

AT 138. AIRCRAFT AND MISSILE ORIENTATION. Class 3, Lab. 3, cr. 4.

A study to assist the student to meet the challenges and responsibilities of the Aerospace Age. An understanding will be developed of the underlying scientific principles basic to aerospace vehicle development and operation.

AT 143. PRIVATE FLIGHT. Class 0, Lab. 3, cr. 1.

Flight instruction to meet FAA private pilot's rating. Includes twenty hours of dual, twenty hours of solo, and eight hours of Link.

AT 144. FAA PRIVATE REQUIREMENTS. Class 3, Lab. 0, cr. 3. Must be taken concurrently with AT 143 unless AT 143 applicant possesses a current FAA form 578A indicating completion of private pilot written requirement.

Preparation for the FAA written examination for private pilot's rating. Covers FAA regulations, theory of flight, aircraft safety, navigation, meterology, and radio.

AT 148. COMMERCIAL FLIGHT I. Class 0, Lab. 3, cr. 1. Must be preceded by AT 143 or the student must hold a currently valid private pilot's rating.

Continuation of flight training received in AT 143 for the purpose of developing a higher degree of coordination and judgment through additional experience in more advanced maneuvers and cross-country flying.

AT 149. FAA COMMERCIAL REQUIREMENTS I. Class 3, Lab. 0, cr. 3. Must be taken concurrently with AT 148.

Additional ground instruction in navigation, meterology, and aircraft engines.

AT 211. TRANSPORT AIRCRAFT MAINTENANCE I. Lab. 15, cr. 5.

Maintenance and repair of airworthy power plants, power plant accessories, and airframes on heavy, transport category aircraft in an FAA-approved repair station.

AT 212. AIRCRAFT ENGINES II. Class 5, Lab. 0, cr. 5. Must be preceded by AT 112 and AT 114.

Coordinated with AT 211 this includes additional instruction on power plants plus discussion and instruction on problems encountered in the laboratory.

AT 213. AIRCRAFT SYSTEMS. Class 2, Lab. 3, cr. 3.

Inspection, maintenance, and theory of operation of aircraft hydraulic, electrical, fuel and oil, pressurization, anti-icing, and instrument systems.

AT 214. JET ENGINE AND ACCESSORIES. Class 3, Lab. 6, cr. 5.

Fundamental principles of jet engines, including the study of compressors, combustion chambers, turbines, fuel controls, fuel systems, lubrication, ignition systems. Disassembly, inspection, and run up of various gas turbine engines. Familiarization with turboprops, rockets, pulse jets, and ram jets will also be given.

AT 215. AIRCRAFT ELECTRICITY. Class 3, Lab. 6, cr. 5.

A study of aircraft electrical systems as they are inter-related with other aircraft systems, power plants, circuits, instrumentation, apparatus, and controls, including their inspection, operation, and maintenance.

AT 216. AIRCRAFT PROPELLERS AND COMPONENTS. Class 2, Lab. 3, cr. 3.

A comprehensive course on propeller theory, function, and operation. A wide range of types and sizes of propellers will be covered for consideration on operations, inspection, maintenance, and overhaul procedures and practices.

AT 217. AIRFRAME MAINTENANCE II. Class 5, Lab. 0, cr. 5. Must be preceded by AT 115 and AT 116.

Coordinated with AT 215 it includes additional instruction on airframes and aircraft systems plus discussion and instruction on problems encountered in the laboratory.

AT 220. APPLIED NAVIGATION I. Class 3, cr. 3. Must be preceded by AT 127 and taken concurrently with AT 224.

Consists of actual navigational preflight planning and enroute navigation of aircraft utilizing all available navigational aids.

AT 221. DC-3 FLIGHT TRANSITION. Class 1, cr. 1.

This course is the flight phase of the DC-3 qualification. Standardization and coordination of the procedures associated with cockpit functions will be stressed. Each student will be given a DC-3 checkout by the PAC chief pilot. He will be certified as a co-pilot on the DC-3 aircraft flown by Purdue Aeronautics Corporation.

AT 222. AIRWAYS PROCEDURES III. Class 2, cr. 2. Must be preceded by AT 129.

Emphasis is placed on increasing instrument proficiency to the maximum level. All types of orientations, intercept problems, holding pattern entries, and approaches will be practiced periodically along with enroute work. Course also includes appropriate portions of flight training.

AT 223. FLIGHT PLANNING AND MANAGEMENT I. Class 2, cr. 2. Must be preceded by AT 130 and taken concurrently with AT 224.

Consists of actual planning of flights and use of necessary forms, weight and balance computations, and publications.

AT 224. DC-3 FLIGHT I. Class 3, cr. 3. Must be taken concurrently with AT 221.

Includes actual flying of transport category DC-3 aircraft. Emphasis is placed on developing skill and safe operating practices in all areas, i.e., take-offs, climbs, enroute flying, let-downs, approaches, landings, emergency procedures, and ground handling of the aircraft.

AT 225. AIRWAYS PROCEDURES IV. Class 2, cr. 2. Continuation of and must be preceded by AT 222.

AT 226. APPLIED METEOROLOGY I. Class 3, cr. 3. Must be preceded by AT 120 and taken concurrently with AT 224.

Material covered during the first year in classroom is now correlated with actual conditions encountered in flight. Operation of airborne weather radar will be demonstrated and proper techniques of thunderstorm identification and avoidance will be practiced. Includes planning of flights with due consideration of forecasted weather.

AT 227. APPLIED NAVIGATION II. Class 3, cr. 3. Continuation of and must be preceded by AT 220 and taken concurrently with AT 228.

AT 228. DC-3 FLIGHT II. Class 3, cr. 3. Must be preceded by AT 224.

AT 229. FLIGHT PLANNING AND MANAGEMENT II. Class 2, cr. 2. Continuation of and must be preceded by AT 223 and taken concurrently with AT 228.

AT 230. APPLIED METEOROLOGY II. Class 3, cr. 3. Continuation of and must be preceded by AT 226 and taken concurrently with AT 228.

AT 231. AIRCRAFT COMMUNICATION AND NAVIGATION SYSTEMS. Class 3, cr. 3. Must be preceded by AT 133.

Studies RF circuits and power supplies; includes a description of common multigrid tubes and characteristics and applications in basic transmitters and receivers used in aircraft.

AT 232. ELECTRONICS III. Class 3, cr. 3. Must be preceded by AT 134.

Includes a study of the electromagnetic spectrum, speech modulation of carrier waves, frequency and phase modulation. Discusses FM and VHF transmitters, receivers and antenna systems.

AT 233. MICROWAVE AVIATION APPLICATIONS. Class 3, cr. 3. Prerequisite AT 231 and AT 232.

Covers radar beacons, radio range beacons, direction and range finding equipment, aircraft servomechanisms, and video systems.

AT 234. ELECTRONICS IV. Class 3, cr. 3. Must be preceded by AT 231 and AT 232.

Studies resonant cavities, waveguides, radar transmitters and receivers; considers free space equations, wave front propagation and cathode ray deflection.

AT 235. AVIONICS LABORATORY III. Lab. 6, cr. 2. To be taken concurrently with AT 231 and AT 232.

Demonstrates the application of solid state devices to VHF and UHF circuits. Studies wave propagation, antenna properties, field strength measurements and detector operation.

AT 236. FCC REGULATIONS. Class 3, cr. 3.
Investigates the FCC regulations and their application to aircraft communications systems. Forms and applications required for reporting to FCC will be studied.

AT 237. AVIONICS LABORATORY IV. Lab. 6, cr. 2. To be taken concurrently with AT 233 and AT 234.
Includes work with magnetrons, wave guides and electron deflection in CR tubes. Introduction to safety procedures and hazards, from microwave radiation. Demonstrates distance measuring and position determination.

AT 243. COMMERCIAL FLIGHT II. Class 0, Lab. 3, cr. 1. Must be preceded by AT 148.
Continuation of flight training received in AT 148. Emphasis placed on cross-country and instrument flight. Introduction to night flight is included.

AT 244. FAA COMMERCIAL REQUIREMENTS II. Class 3, cr. 3. Must be taken concurrently with AT 243.
Stresses radio communication and navigation, use of E6B computer, and aircraft instrument study.

AT 248. COMMERCIAL FLIGHT III. Class 0, Lab. 3, cr. 1. Must be preceded by AT 243.
Continuation of flight training received in AT 243. Emphasis is placed on precision flying to develop technical and aeronautical experience as required by the FAA for a commercial pilot rating.

AT 249. FAA COMMERCIAL REQUIREMENTS III. Class 3, Lab. 0, cr. 3. Must be taken concurrently with AT 248.
Forty-eight classroom hours devoted to aircraft, FAA regulations, aerial navigation meterology, aircraft engines, and radio aids to navigation in preparation for the commercial pilot's rating.

AT 260. AIRLINE TRANSPORT REGULATION AND RADIO PROCEDURES. Class 2, cr. 2. Must be preceded by AT 129 and AT 130.
Course will review appropriate regulations and radio procedures as are applicable to the airline transport pilot's rating.

AT 261. AIRLINE TRANSPORT NAVIGATION AND METEOROLOGY. Class 2, cr. 2. Must be preceded by AT 120 and AT 127.
Course reviews navigation and meteorology principles and practices as are applicable to the airline transport pilot's rating.

AT 262. DC-6 AIRCRAFT FAMILIARIZATION. Class 5, cr. 5. Must be preceded by AT 128.
Course discusses, in detail, the specifications, construction features, controls, systems, instrumentation, emergency equipment, and maintenance of the DC-6 airplane.

AT 263. DC-6 AIRCRAFT AND ENGINE FAMILIARIZATION. Class 4, cr. 4. Continuation of and must be preceded by AT 262.
Emphasis is placed on Pratt and Whitney R-2800 engine specifications, construction features, lubrication, ignition, carburetion and induction, accessories, propellers, instrumentation, emergency equipment, and engine maintenance.

AT 264. DC-6 NORMAL OPERATIONS. Class 1, cr. 1. Must be preceded by AT 262 and taken concurrently with AT 263.
Includes use and trouble shooting of all aircraft systems, loading and center of gravity computations, use and trouble shooting of all engine systems, cruise control, power and fuel computations, and meteorology applicable to engine operations.

UNDERGRADUATE LEVEL

Upper-Division Classes

AT 321. AIRWAYS PROCEDURES V. Class 2, cr. 2. Continuation of and must be preceded by AT 225.

AT 322. APPLIED METEOROLOGY III. Class 3, cr. 3. Continuation of and must be preceded by AT 230 and taken concurrently with AT 324.

AT 323. APPLIED NAVIGATION III. Class 3, cr. 3. Continuation of and must be preceded by AT 227 and taken concurrently with AT 324.

AT 324. DC-3 FLIGHT III. Class 3, cr. 3. Must be preceded by AT 228.

AT 325. FLIGHT PLANNING AND MANAGEMENT III. Class 2, cr. 2. Continuation of and must be preceded by AT 229 and taken concurrently with AT 324.

AT 326. DC-6 NORMAL AND EMERGENCY OPERATIONS. Class 4, cr. 4. Continuation of and must be preceded by AT 263 and taken concurrently with AT 327 and AT 328.
Emphasis is placed on use of portable fire extinguishers, fuselage fire and smoke

control, engine fire control, loss of engine power, loss of electrical power, propeller feathering and unfeathering.

AT 327. DC-6 PROCEDURAL TRAINER. Class 1, cr. 1. Must be taken concurrently with AT 326 and AT 328.

Student will receive 16 hours of instruction in the DC-6 procedural trainer in both normal and emergency operations.

AT 328. DC-6 FLIGHT ENGINEERING. Class 1, cr. 1. Must be taken concurrently with AT 326 and AT 327.

Student will receive 15 hours of flight engineer time in DC-6 aircraft. During this time he will practice normal and emergency operations procedures under the supervision of an instructing flight engineer. One hour of flight time will be allowed, where necessary, for an FAA check ride.

AT 341. INSTRUMENT FLIGHT. Class 0, Lab. 3, cr. 1. Open only to students who hold valid private or commercial flight ratings.

Prepares the commercial pilot for the FAA instrument ratings. The student will receive thirty-two hours of instrument flight and sixteen hours of Link.

AT 342. INSTRUMENT LECTURES. Class 3, Lab. 0, cr. 3. Must be taken concurrently with AT 341.

Forty-eight classroom hours on FAA regulations, meterology, aircraft, theory of flight, navigation instruments, radio and navigational aids, and instrument flight procedures.

DEPARTMENT OF ENGINEERING TECHNOLOGY

Professor Rountree in charge

ARCHITECTURAL ENGINEERING TECHNOLOGY

Assistant Professors: (Calumet) Hutton; (Fort Wayne) Smith, Moss; (Indianapolis) Scholl.

Instructor: (Calumet) McAllister.

Lecturers: (Calumet) Armstrong, Barney, Callantine, Maloney, Todd; (Fort Wayne) W. G. Rammel, W. V. Rammel, Robinson; (Indianapolis) Davis; (Michigan City) Johnson.

UNDERGRADUATE LEVEL

Lower-Division Courses

BC 116. ARCHITECTURAL DRAWING. Lab. 6, cr. 2.

Introduction to architectural drawing, including use of instruments, lettering, orthographic projection, isometric views, and simple working drawings.

BC 156. FRAME CONSTRUCTION. Class 1, Lab. 6, cr. 3. Must be preceded by BC 116.

Problems of wood frame structure, such as houses, details, and elementary design.

BC 164. BUILDING MATERIALS. Class 3, cr. 3.

Properties and use of materials as found in building construction.

BC 172. SYSTEMS OF CONSTRUCTION. Class 2, cr. 2.

Survey of different types of construction, including wood, steel, and reinforced concrete and curtain walls, considering the characteristics, advantages, and limitations.

BC 204. BUILDING REGULATIONS. Class 2, cr. 2.

Building codes, ordinances, and regulations, with emphasis on those for structures in Indiana.

BC 220. CONCRETE AND MASONRY CONSTRUCTION. Class 1, Lab. 6, cr. 3. Must be preceded by BC 116.

Preparation of drawings for light masonry structures, such as small buildings and stores; analysis of design, strength, and construction details.

BC 236. ARCHITECTURAL PROJECTIONS. Lab. 6, cr. 2. Must be preceded by BC 116 or BC 156.

Introduction to projection, intersections, shading and shadows, and perspective drawing.

BC 241. ARCHITECTURAL DESIGN I. Lab. 6, cr. 2. Must be preceded by BC 116 and BC 156.

Planning, development and architectural delineation of small structures; using pencil, charcoal and water color.

BC 242. ARCHITECTURAL DESIGN II. Lab. 6, cr. 2. Must be preceded by BC 241.

Continuation of Architectural Design I with emphasis on large structures.

BC 248. HISTORY OF ARCHITECTURE I. Class 2, cr. 2.

Survey of the architectural periods, styles, and influence of cultures, which led to the development of architecture from earliest written historical times to the present day.

BC 249. HISTORY OF ARCHITECTURE II. Class 2, cr. 2. Must be preceded by BC 248.

Survey of architectural periods, styles and the influence of cultures which led to the development of architecture from the Romanesque period to the present day.

BC 256. STRUCTURAL DRAFTING. Class 1, Lab. 6, cr. 3. Must be preceded by DM 212 and BG 156 or BC 220.

Detailing simple structural steel, reinforced concrete, and wood structures; elementary design principles.

BC 265. STRUCTURES I. Class 3, cr. 3. Must be preceded by DM 212 and Math 112.

Design of wood and steel frame structures.

BC 266. STRUCTURES II. Class 1, Lab. 6, cr. 3. Must be preceded by Structures I (BC 265).

Design of wood and steel trusses.

BC 276. SPECIFICATIONS AND CONTRACT DOCUMENTS. Class 2, cr. 2. Must be preceded by BC 156, BC 220, and accompanied or preceded by GN 220.

Preparation of general conditions and major phases of building construction specifications, study agreements, contracts, liens, and bonds.

BC 278. BUILDING CONSTRUCTION PRACTICES. Class 2, cr. 2. Must be preceded or accompanied by GN 268 and BC 276.

Extensive survey of business practices and problems common to the construction industry.

BC 280. QUANTITY SURVEY. Class 2, Lab. 3, cr. 3. Must be preceded by BC 156, BC 164 and BC 220.

Approximate and detailed methods of estimating materials and labor required to erect a building.

BC 284. MECHANICAL EQUIPMENT OF BUILDINGS. Class 2, cr. 2.

Survey course of the different types of systems and their applications.

BC 288. ELEMENTARY SURVEYING. Class 1, Lab. 3, cr. 2. Must be preceded by or accompanied by MA 112 or equivalent.

Plane surveying using 100-ft. steel tape, level, and transit.

BC 292. ESTIMATING. Class 3, cr. 3. Must be preceded by BC 156, 164 and 220.

Approximate and detailed methods of estimating materials and labor required to erect a building.

UNDERGRADUATE LEVEL

Upper-Division Courses

BC 336. REINFORCED CONCRETE. Class 4, cr. 4. Must be preceded by DM 212 or by permission.

Basic concrete design as applied to beams and girders, one- and two-way slabs, columns, and footings.

BC 340. CONSTRUCTION METHODS. Class 4, cr. 4. Must be preceded by BC 156 and 220.

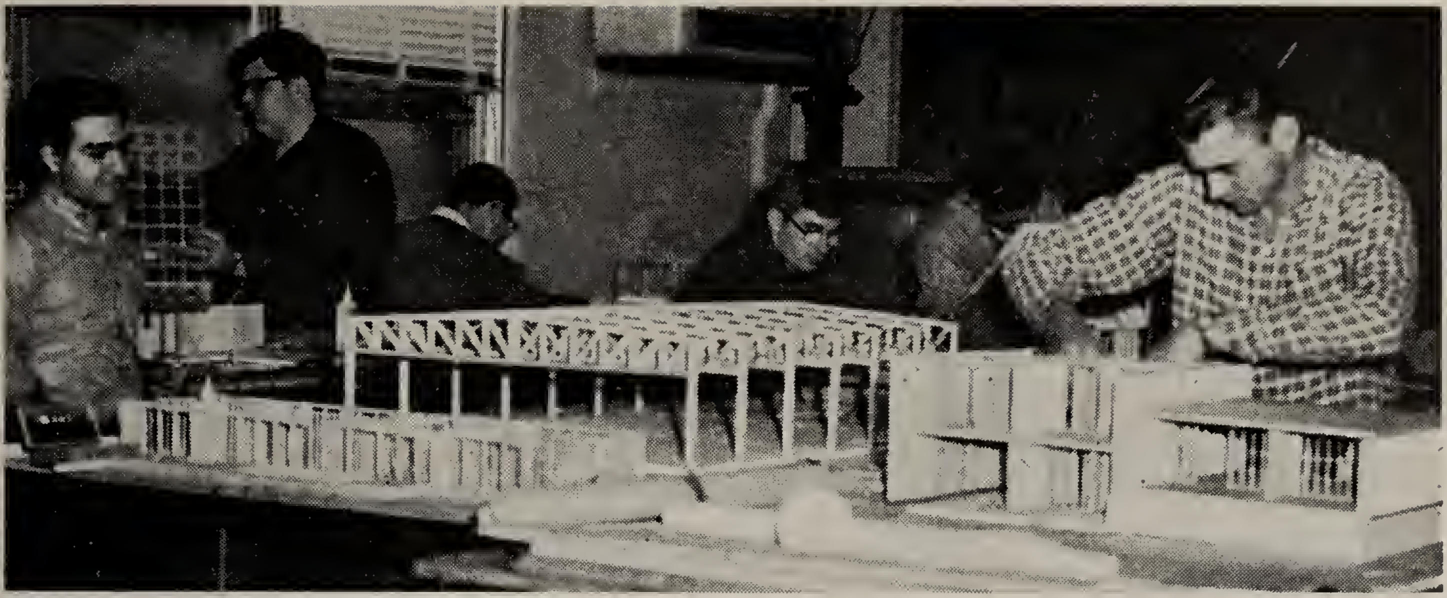
Methods used in erecting buildings.

BC 356. HEATING, VENTILATING, AND AIR CONDITIONING. Class 4, cr. 4. Must be preceded by PS 176.

Types of heating systems, heat transmission and insulation, heat exchangers, fans and ducts, air-vapor mixtures, air conditioning.

BC 396. BULDING CONSTRUCTION TECHNOLOGY. Class 2-4 and/or Lab. 3-9, cr. 1 to 7.

Fee will be charged at the rate of $15 per class hour and $4 per laboratory hour. Hours as arranged with staff. Primarily for students who have completed requirements for the Diploma in Applied Technology.



Architectural engineering technology majors gain framing experience with models in frame construction lab.

CHEMICAL AND METALLURGICAL ENGINEERING TECHNOLOGY

Lecturers: (Calumet) Barnes, Crane, Golding, Lambert, Metz, Speer.

PERSONAL SERVICE COURSES

CM 10. FERROUS MATERIALS AND PROCESSES. Class 1, cert. units 1, $15.

Applications and characteristics, both physical and chemical, of the more common ferrous materials, and the mechanical processes by which they may be shaped or formed.

CM. 12. MATERIALS AND PROCESSES IN STEELMAKING. Class 2, cert. units 2, $30.

Survey of the use, the how and the why of metallurgy. Includes the guiding principles, defining terms and outlining manufacturing processes uesd in steelmaking, discussion of theories of steelmaking for the student as well as the practical man in industry.

CM 24. CHEMISTRY OF STEELMAKING II. Class 2, Lab. 2, cert. units 3, $53. Must be preceded by PS 6.

Continuation of PS 6.

CM 56. FERROUS METALLURGY I. Class 2, cert. units 2, $30. Must be preceded by PS 6 and 24.

The basic principles of ferrous metallurgy and an understanding of their application to steel production.

CM 64. FERROUS METALLURGY II. Class 2, cert. units 2, $30. Must be preceded by CM 56.

Continuation of CM 56.

UNDERGRADUATE LEVEL

Lower-Division Courses

CM 154. INDUSTRIAL CHEMISTRY. Class 3, Lab. 3, cr. 4. Must be preceded by MA 111 and PS 120.

Quantitative interpretations of chemical equations by numerical problems and practical application to industrial processes, using the principles of introductory chemistry.

CM 184. FERROUS METALLURGY. Class 3, cr. 3. Must be preceded or accompanied by CM 54.

Appliances and methods used in the reduction, refining, and shaping of ferrous alloys.

CM 212. INDUSTRIAL CHEMISTRY: QUALITATIVE. Class 1, Lab. 6, cr. 3. Must be preceded by PS 120 and MA 112.

Systematic semimicro analysis, with emphasis upon modern industrial techniques.

CM 228. PHYSICAL METALLURGY. Class 3, Lab. 3, cr. 4. Must be preceded by CM 184 or PS 176.

Basic principles: solid solutions, intermetallic compounds, equilibrium diagrams, plastic deformation, recrystallization and grain growth, heat treatment, and phase changes in the solid state.

Chemical and metallurgical engineering technology class receives instruction in lab techniques.

CM 240. HEAT TRANSFER. Class 2, Lab. 3, cr. 3. Must be preceded by MA 112 and PS 176.

Fundamentals of heat transfer as applied to furnaces, heat exchanges, steam generators, cooling towers, evaporators, and distilling equipment.

CM 252. INDUSTRIAL CHEMISTRY: QUANTITATIVE. Class 1, Lab. 6, cr. 3. Must be preceded by CM 212.

An introduction to gravimetric, titrimetric, and potentiometric methods applicable to modern industrial practices.

CM 280. NONFERROUS METALLURGY. Class 2, cr. 2. Must be preceded or accompanied by CM 152.

Fundamentals of production metallurgy, with specific consideration of the methods employed in the reduction and refining of selected nonferrous metals.

CM 284. METALLOGRAPHY. Class 1, Lab. 6, cr. 3. Must be preceded by CM 228.

Preparation and microscopic examinations of metals.

UNDERGRADUATE LEVEL

Upper-Division Courses

CM 396. CHEMICAL AND METALLURGICAL TECHNOLOGY. Class 2-4 and/or Lab. 3-9, cr. 1 to 7. Fee will be charged at the rate of $15 per class hour and $4 per laboratory hour. Hours as arranged with staff.

Primarily for students who have completed the requirements for the Diploma in Applied Technology. Special studies in chemical and metallurgical technology.

CIVIL ENGINEERING TECHNOLOGY

Assistant Professor: (Indianapolis) Beck.
Lecturers: (Indianapolis) Frank, Peale, Ross, Smith, Wark.

UNDERGRADUATE LEVEL

Lower-Division Courses

CT 152. FUNDAMENTALS OF SURVEYING. Class 1, Lab. 3, cr. 2. Must be preceded or accompanied by MA 112.

Measurement of distances, elevations, directions, and angles, using tape, level, compass, and transit. Computation of areas and traverses, city surveys, lines and grades, and plotting of field notes.

CT 204. LAND SURVEYING. Class 1, Lab. 3, cr. 2. Must be preceded by CT 152.

Theory and practice of land surveying, subdivision, filing and recording deeds, United States government survey of public lands, laws of land surveying, descriptions, area computations, county planning, zoning highways, and the Indiana land lot system of land subdivision.

CT 208. ROUTE SURVEYING. Class 1, Lab. 3, cr. 2. Must be preceded by CT 152.

Preliminary and construction surveys for highways and railroads, including simple, compound, reverse, and easement curves, superelevation of curves, profiles, grade lines, slope stakes, yardage estimates, and mass and haul diagrams.

CT 252. SURFACE AND SUBSURFACE PROBLEMS. Class 3, cr. 3. Must be preceded by DM 212.

Applications of fundamental principles of fluid flow overland, through pipes and in channels, application of soil mechanics principles and their effects upon foundation design.

CT 256. INSPECTING AND TESTING PROCEDURE. Class 1, Lab. 3, cr. 2. Must be preceded by PS 136, DM 212, and BC 164.

Basic theory involved in sampling various materials used in highway construction, including screening aggregates, cement yield test, air content, soil compaction, and bituminous control test.

CT 260. HIGHWAYS. Class 2, cr. 2. Must be preceded by BC 164 and CT 208.

Highway planning, administration, finance, location, design, construction, subgrade stability, maintenance, and operation.

CT 272. PHOTOGRAMMETRY. Lab. 3, cr. 1. Must be preceded by CT 204 and 208.

The use of maps and charts from aerial photographs by use of stereoscopic and ground survey methods as well as specifications and requirements for aerial surveys.

CT 274. LAND SUBDIVISION. Class 1, Lab. 3, cr. 2. Must be preceded by CT 204.

Subdivision planning, calculations and plotting, water main layouts, storm and sanitary sewer calculations and layouts. Street plans and profiles.

CT 299. CIVIL ENGINEERING TECHNOLOGY. Class 2-4 and/or Lab. 3-9, cr. 1 to 7.

Hours to be arranged with the staff. Primarily for third and fourth semester students. Subject matter to be assigned by the staff.

MECHANICAL ENGINEERING TECHNOLOGY

Assistant Professors: (Fort Wayne) Rosencrans, Tryon; (Calumet) McCormick; (Indianapolis) Klee, Stoelk; (Michigan City) Lisarelli.

Associate Professor: (Calumet) Zacher.

Lecturers: (Calumet) Ballard, Concialdi, Gibney, Householder, Halkias, Spalding, Mayer, Miller, Roberts; (Fort Wayne) Brokaw, Mannan; (Indianapolis) Hillsman, Robbins, Spray; (Michigan City) Hutton, Tanber.

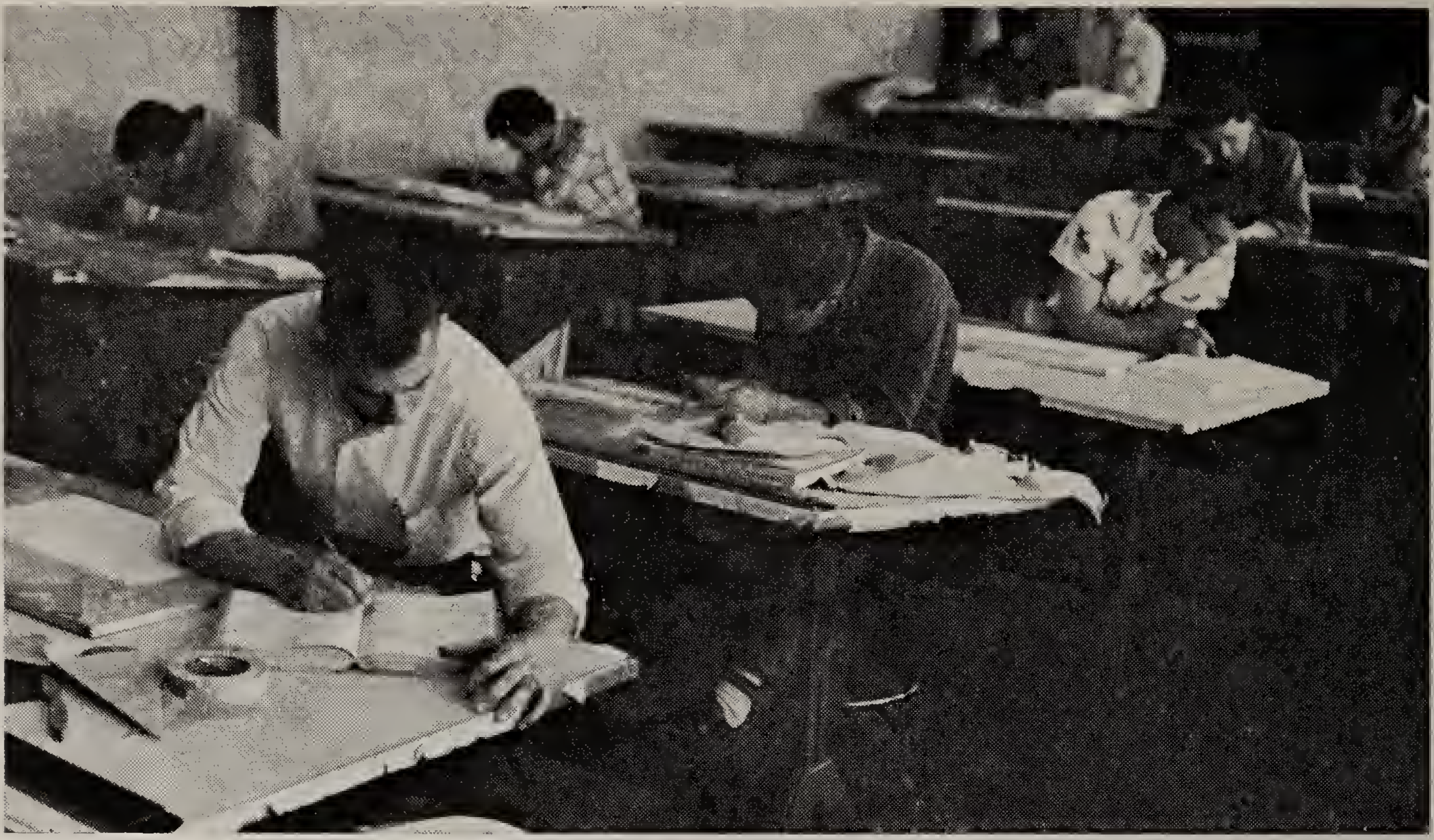
PERSONAL SERVICE COURSES

DM 24. MECHANICAL MAINTENANCE PRINCIPLES. Class 4, cert. units 4, $60.

Principles and practices of modern mechanical maintenance.

DM 25. MECHANICAL MAINTENANCE PRINCIPLES—PART I. Class 2, cert. units 2, $30.

First half of DM 24.



Mechanical engineering technology students study advanced drafting.

DM 26. MECHANICAL MAINTENANCE PRINCIPLES—PART II. Class 2, cert. units 2, $30.

Second half of DM 24.

DM 42. TECHNICAL AND FREEHAND DRAFTING AND BLUEPRINT READING, PART I. Class 1, Lab. 2, cert. units 2, $38.

An introduction to technical drawing, orthographic projections, both technical and freehand. Detailing from layouts of industrial equipment, multiview drawings, and sectional views.

DM 44. TECHNICAL AND FREEHAND DRAFTING AND BLUEPRINT READING, PART II. Class 0, Lab. 2, cert. units 1, $23. Must be preceded by DM 42.

Continuation of DM 42. Emphasis is given to concepts necessary to broaden the student's perspective in communicating technical knowledge of machines, structures, piping, and hydraulic drawings.

DM 52. TECHNICAL DRAWING AND FREE HAND DRAFTING. Lab. 4, cert. units 2, $46. Must be preceded by PS 60.

Introduction to technical drawing and freehand drafting, including use of instruments, lettering, orthographic projection, and blueprint reading. Preparation of working details and assembly drawings from simple layouts, with emphasis upon industrial practice.

DM 60. MECHANICS: STATICS. Class 3, cert. units 3, $45. Must be preceded by PS 60, PS 40.

DM 63. MECHANICS. Class 2, cert. units 2, $30.

Problem-solving course in statics, strength of materials, pneumatics, and hydraulics.

DM 65. MECHANICS: STATICS, DYNAMICS, KINEMATICS, AND STRENGTH OF MATERIALS. Class 7, cert. units 7, $105. Must be preceded by PS 60 and PS 40.

Analytical studies of forces and motion, kinematics, mechanisms, work, energy, momentum, stress and strain, beams, torque, and columns.

DM 68. STRENGTH OF MATERIALS. Class 2, cert. units 2, $30. Must be preceded by DM 60.

A study of the elastic behavior of engineering materials, stress, strain, tension, compression, shear, riveted and welded joints, beams, shafts, and columns.

DM 74. MECHANICAL DRAWING AND FREEHAND SKETCHING. Lab. 2, cert. units 1, $23.

Introduction to technical drafting, including use of instruments, lettering, and orthographic projection.

Emphasis on freehand sketching.

DM 75. MECHANICAL ANALYSIS AND BLUEPRINT READING. Class 1, cert. units 1, $15.

Analysis of machines from the standpoint of serviceability, systems of lubrication, strength, and motion.

DM 78. MECHANISMS. Class 1, cert. units 1, $15.

Motion of machine members; special consideration given to mechanism used in steel mills.

DM 81. MECHANICAL ANALYSIS. Class 7, cert. units 7, $105. Must be preceded by DM 65.

A study of mechanical elements such as clutches, brakes, belts, gears, bearings, etc. The fields of lubrication, hydraulics, pneumatics, piping, and valves are treated extensively.

DM 88. FUELS AND COMBUSTION. Class 2, cert. units 2, $30.

Study of types and kinds of fuels and their behavior under varied conditions.

UNDERGRADUATE LEVEL

Lower-Division Courses

DM 156. GRAPHICAL COMPUTATIONS. Class 1, Lab. 6, cr. 3. Must be preceded by EG 110 and preceded or accompanied by MA 112.

Descriptive and analytic geometry principles applied to the solution of engineering problems; intersections and development of planes and solids; layout of objects in space; and determination of clearances between objects in space.

DM 180. MATERIALS AND PROCESSES. Class 3, cr. 3.

Application and characteristics, both physical and chemical, of the materials most commonly used in industry; the mechanical processes by which materials may be shaped or formed.

DM 200. POWER SYSTEMS. Class 3, cr. 3. Must be preceded by PS 136 and preceded or accompanied by DM 216.

A survey of steam and nuclear power plants, internal combustion engines, gas turbines, pumps, compressors, fans and blowers, refrigeration. Some theory in thermodynamics, combustion of fuels, heat transfer. Power generation and application to various fields with special mention of transportation.

DM 204. PRODUCTION DRAWING. Class 1, Lab. 6, cr. 3. Must be preceded by EG 110 and preceded or accompanied by DM 180.

Preparation of working drawings from layouts, drafting simplification, functional dimensioning, assembly drawings, detailing of machine elements, working with manufacturers' catalogs, applying fits, limits and tolerances to dimensions for interchangeable manufacture; information as to material, physical treatment, and manufacturing processes. The student works from layouts with a minimum of information so that self reliance in detailing may be developed.

DM 212. MECHANICS OF MATERIALS. Class 4, cr. 4. Must be preceded by PS 136 and preceded or accompanied by MA 112.

Forces acting on rigid bodies at rest and in motion-embracing vectors, force and moment laws of equilibrium for various force systems, centroids, center of gravity and moments of inertia, stress and strain, riveted and welded joints, torsion, shear, bending and deflection of beams, combined stresses and columns.

DM 216. MACHINE ELEMENTS. Class 3, cr. 3. Must be preceded by DM 204 and 212.

A survey of the more important elements used in tools and machines, and their general characteristics pertaining to application, operational behavior, efficiency, economy, and standardization.

DM 228. MACHINE DESIGN I. Class 1, Lab. 6, cr. 3. Must be preceded or accompanied by DM 216.

Practical applications in the design of machines and products utilizing mechanical, pneumatic, hydraulic and electrical operation and control.

DM 232. DYNAMICS AND MECHANISMS. Class 3, cr. 3. Must be preceded or accompanied by DM 216.

Basic fundamentals of mechanisms; linkages, motions in machines, and cams. Basic fundamentals of dynamics; displacement, velocities, accelerations, work energy, power, impulse, momentum, and impact.

DM 236. JIG AND FIXTURE DESIGN. Class 1, Lab. 6, cr. 3. Must be preceded by DM 204.

Application of principles in the design and construction of drilling, milling, reaming and assembly jigs and fixtures; information related to materials, heat treatment and cost estimating. Gaging characteristics, selection and design for interchangeable manufacture.

DM 256. MATERIAL FABRICATION. Class 3, cr. 3. Must be preceded or accompanied by DM 180.

A study of the physical characteristics of metals and non-metals with respect to their behavior during fabrication; methods of material removal; elementary aspects of machine tool operation and tooling reqiurements.

DM 264. MACHINE DESIGN II. Class 1, Lab. 6, cr. 3. Must be preceded by DM 228 and DM 232.

Application of principles in the design and construction of machines and products. The assigned problems emphasize force analysis and strength calculations necessary for mechanical, hydraulic, pneumatic and electrical operation.

DM 288. DIE DESIGN. Class 1, Lab. 6, cr. 3. Must be preceded by DM 204.

Application of principles in the design and construction of piercing, blanking, forming, drawing dies; single combination compound and progressive type dies. Cam and assembly dies. Related information as to materials, heat treatment, and cost estimating.

DM 294. MECHANICAL ANALYSIS. Class 3, cr. 3. Must be preceded by DM 216 and DM 232.

A study of power transmission devices; mechanical, such as gears, bolt drives, chain drives; pneumatic; and hydraulic. Machine control devices; speed changers, clutches, brakes. General analysis of typical machines from the standpoint of force, strength, motion, efficiency, serviceability, function, economy, lubrication. Review and discussion of actual designs.

DM 296. MACHINE TOOL LABORATORY. Lab. 3, cr. 1. Must be preceded or accompanied by DM 180.

Two weeks' course consisting of 48 laboratory hours of instruction offered at the Lafayette campus on a full-time basis or on the eight Saturdays during the regular summer session.

To acquaint students with the uses and limitations of general purpose and production machines as well as with integrating processes of foundry welding, heat treating, and inspection into production planning.

DM 299. DRAFTING AND MECHANICAL TECHNOLOGY. Class 2-4, Lab. 3-9, cr. 6. Fee will be charged at the rate of $15 per class hour and $4 per laboratory hour. Hours as arranged with staff.

Special studies in drafting and mechanical technology. Primarily for students who have completed most of the requirements for the Associate in Applied Science degree and desire to take an additional course in a specialized phase of drafting and mechanical technology.

ELECTRICAL ENGINEERING TECHNOLOGY

Associate Professors: (Calumet) Anderson, Rapalski; (Indianapolis) Rainey, Wisner.

Assistant Professors: (Calumet) Jen, Haselsteiner, Rhodes; (Fort Wayne) Gideon.

Instructors: (Calumet) Reed, Stillman; (Indianapolis) Schultz.

Lecturers: (Calumet) Belshaw, Bergstadt, Boroviak, Dohr, Erickson, Gundy, Skoog, Whitesell; (Indianapolis) Hill, Bowles.

PERSONAL SERVICE COURSES

ET 9. LABORATORY V. Class 0, Lab. 2, cert. units 1, $23. Must accompany ET 64, ET 72, and ET 80.

Part I of two parts. Laboratories series designed to complement the materials of equipping courses.

ET 10. LABORATORY VI. Class 0, Lab. 2, cert. units 1, $23. Must be preceded by ET 9 and accompanied by ET 65, ET 73, and ET 81.

Part II of two parts. Continuation of ET 9.

ET 12. COMPUTER ELECTRONICS I. Class 2, Lab. 2, cert. units 3, $53.

Basic fundamentals of transistors and vacuum tubes. Use of the oscilloscope, audio oscillators and voltmeters in trouble shooting electronic circuits is emphasized. The basic electronic circuits in computers are considered.

ET 14. COMPUTER ELECTRONICS II. Class 2, Lab. 2, cert. units 3, $53.

Electronic circuits utilized in computers are emphasized. Power supply circuits and special circuits are also discussed Trouble shooting techniques are of primary consideration.

ET 15. BASIC ELECTRICITY. Class 2, Lab. 4, $80.

Basic electrical terms, units, symbols, and schematics are discussed. Equipment such as voltmeters, ohmmeters, ammeters, generators, and oscilloscopes are demonstrated. Magnetism, inductance, capacitance series and parallel circuits are considered. Basic principles of alternating current, capacitive reactance, inductive reactance, impedance, phasors, power factor, and resonance are studied.

ET 23. TRANSISTOR AND VACUUM TUBE FUNDAMENTALS. Class 2, Lab. 4, $80.

Transistor fundamentals, semiconductor diodes, vacuum tube diodes, triodes, tetrodes, pentodes are discussed. The use of oscilloscopes, audio oscillators, and voltmeters in electronic circuits such as amplifiers, power supplies, and oscillators is considered.

ET 36. ELECTRICAL BLUEPRINTS AND DIAGRAMS. Class 2, cert. units 2. $30.

A study of blueprints and diagrams related to electrical systems and controls normally used in steel mills.

ET 38. DC CIRCUITS. Class 3, Lab. 2, cert. units 4, $68. Must be preceded or accompanied by PS 30.

A brief consideration of direct current circuit theory and application consistent with modern steel mill requirements.

ET 39. ELECTRONIC CIRCUITS. Class 2, Lab. 4, $80.

Transistors and vacuum tubes used in circuits are considered. Power supply circuits, audio amplifiers, RF amplifiers, oscillators, modulation, AM transmitters and receivers, FM transmitters and receivers are discussed. Special electronic circuits such as clippers, clampers, multivibrators, blocking oscillators, sweep circuits are studied. Trouble shooting techniques are emphasized.

ET 40. DC CIRCUITS AND MACHINES. Class 3, Lab. 2, cert. units 4, $68. Must be preceded by PS 36 and preceded or accompanied by PS 28.

DC machines and apparatus from the viewpoint of construction details, industrial application, and methods of operation.

ET 41. ELECTRONIC CONTROL CIRCUITS. Class 2, Lab. 4, $80.

Rotating electrical machinery and control circuits, servo-mechanism components such as error detectors, amplifiers, detectors, magnetic amplifiers are considered. Specialized electronic control circuits are discussed.

ET 45. COMMUNICATIONS ELECTRONICS. Class 2, Lab. 4, $80.

Principles of television, UHF, microwaves, transmitters and receivers, FCC exam information, trouble shooting techniques are considered.

ET 48. ELECTRICAL MAINTENANCE—PART I. Class 3, cert. units 3, $45.

A brief consideration of the theory and practice of the maintenance of electrical machines and controls centered about a series of graded blueprints in such manner that the student becomes familiar with blueprint reading as he studies basic theory and practice.

ET 49. ELECTRICAL MAINTENANCE—PART II. Class 3, cert. units 3, $45.

Continuation of ET 48.

ET 50. ELECTRICAL MAINTENANCE—PART III. Class 3, cert. units 3, $45.

Continuation of ET 49.

ET 52. AC CIRCUITS. Class 3, Lab. 2, cert. units 4, $68. Must be preceded by ET 40.

Nature of alternating current, methods of generation, single-phase currents, polyphase currents; practical concepts of power, power-factor, reactive factor, reactance, and impedance; simple AC circuit calculations.

ET 56. BASIC ELECTRONICS AND ELECTRICAL CIRCUITS. Class 2, cert. units 2, $30.

Practical fundamentals of electrical circuits and electronics.

ET 60. AC MACHINES. Class 3, Lab. 2, cert. units 4, $68. Must be preceded by ET 52.

Construction details and practical performance of transformers, induction motors, alternators, synchronous motors, rectifiers, and other common alternating current apparatus.

ET 64. POWER DISTRIBUTION AND PROTECTIVE RELAYING I. Class 1, cert. units 1, $15. Must be preceded by ET 60 or equivalent.

Part I of two parts. Emphasis on industrial power systems function and protection.

ET 65. POWER DISTRIBUTION AND PROTECTIVE RELAYING II. Class 1, cert. units 1, $15. Must be preceded by ET 64.

Continuation of ET 64. Industrial power systems, function and protection.

ET 68. MOTOR CONTROL. Class 3, cert. units 3, $45.

Application of controllers for electric motors used in the steel industry.

ET 72. AUTOMATION: DEVICES. Class 3, cert. units 3, $45. Must be preceded by ET 60 and ET 76 or equivalent.

Operation principles of regulations and control system components.

ET 73. AUTOMATION: SYSTEMS. Class 2, cert. units 2, $30. Must be preceded by ET 72.

Study of selected processes, control and loop systems.

ET 76. BASIC ELECTRONICS. Class 3, cert. units 3, $45.

Effective with the fall semester, 1964, ET 76 will be presented during the third semester instead of as presently listed.

ET 78. ELECTRICAL MAINTENANCE AND BLUEPRINTS. Class 3, cert. units 4, Lab. 2, $68.

Discussions on scheduled inspection programs, trouble shooting, and preventive maintenance equipment used in the steel mill.

ET 80. ELECTRONICS: TUBES AND INDUSTRIAL APPLICATIONS. Class 2, cert. units 2, $30. Must be preceded by ET 76 or equivalent.

Review of electronics with extended emphasis on industrial circuits.

ET 81. TRANSISTORS AND SOLID STATE DEVICES. Class 2, cert. units 2, $30. Must be preceded by ET 80.

Semi-conductor principles, characteristics, and applications.

ET 92. INDUSTRIAL ELECTRONICS. Class 2, cert. units 2, $30.

Principles of operation and industrial applications of the common types of vacuum and gas tubes, photo-electric cells, and cathode ray tubes.

ET 93. TECHNICAL ADVANCEMENTS. Class 1, cert. units 1, $15. Must be accompanied by ET 65 and ET 73.

Selected topics in sciences and technology.

UNDERGRADUATE LEVEL

Lower-Division Courses

ET 104. ELECTRONICS I—CIRCUITS. Class 3, Lab. 3, cr. 4. Must be preceded or accompanied by PS 176 and MA 111.

A study of the principles of operation and industrial applications of the more common types of vacuum and gas tubes, photo-electric cells, and cathode ray tubes. The simple basic circuits using these tubes are studied and their applications emphasized.

ET 106. INTRODUCTION TO COMPUTER FUNDAMENTALS. Class 3, cr. 3.

Reviews direct current and alternating current concepts and vacuum tube fundamentals. Surveys vacuum tube circuits, rectifiers, simple amplifiers, and fundamental oscillators. Review theory of transistors, basic transistor and semiconductor circuits, rectifiers, amplifiers, and oscillators. Deals with special types of transistors and bistable and multivibrator circuits. Introduces logic in electrical circuits, binary arithmetic, Boolean algebra, and the electronic flipflop circuit. Surveys binary counting circuit, ring circuits for timing, simple memory, analog arithmetic operations components, rheostats, synchros, and resolvers. Reviews analog to digital conversion circuits, and input and readout devices.

ET 156. ELECTRONICS II—SEMI-CONDUCTORS; TRANSISTORS. Class 2, Lab. 3, cr. 3. Must be preceded by ET 104 and preceded or accompanied by ET 176.

A study of the theory and application of transistors and other semi-conductors, with emphasis placed upon practical uses of these devices in industrial and communication circuits, including study of crystal diodes as detectors, diode power applications, and applications of transistors.

ET 176. ELECTRICAL CIRCUITS. Class 3, Lab. 3, cr. 4. Must be preceded or accompanied by MA 112, and ET 104.

Nature of direct and alternating current electricity and practical applications of theory to concepts involving: resistance, simple circuits, power, power factors, reactance, impedance, simple DC and AC circuit calculations, and complex notation.

ET 208. AC AND DC MACHINES AND CONTROLS. Class 2, cr. 2. Must be preceded by ET 176.

The elementary study of AC and DC machines and their controls. This includes accelerating relays, protective relays, circuit breakers, controllers, and contractors.

ET 212. ELECTRICAL MACHINES. Class 4, Lab. 3, cr. 5. Must be preceded by ET 176.

Particular emphasis is placed on operational theory and application of both AC and DC machines in industry. Transformers and their roles in industry are studied, and industrial electrical systems are analyzed.

ET 216. ELECTRICAL MACHINES AND CONTROLS. Class 3, cr. 3. Must be preceded by MA 112 and PS 176 or equivalent.

Lecture, recitation and demonstration are combined to acquaint the student with the elements of electrical circuits and machines as they are applied as component parts of machine drives and controls within the requirements of the National Electrical Code and in conformity to the ratings and dimensional specifications of NEMA. Manufacturers catalogs and pamphlets are used freely as classroom aids.

ET 224. FUNDAMENTALS OF TELEVISION. Class 2, cr. 2. Must be preceded or accompanied by ET 236.

Principles of television transmission and receiver systems, frequency modulation, and standards set by the Federal Communications Commission.

ET 228. POWER DISTRIBUTION. Class 2, cr. 2. Must be preceded or accompanied by ET 212.

A study of the equipment used in transmission and distribution of electrical energy from generating station to consumer, including overhead and underground circuits, high and low voltage circuits, overload and short circuits, and indoor and outdoor lighting.

ET 236. ELECTRONICS III—RADIO CIRCUITS. Class 4, Lab. 3, cr. 5. Must be preceded by ET 156 and ET 176.

Structural details and elementary principles of operation of rectifiers, amplifiers of various types, modulation, demodulation, receivers and their characteristics.

ET 252. ELECTRIC POWER BLUEPRINTS AND DIAGRAMS. Class 1, Lab. 3, cr. 2. Must be preceded by EG 110, and preceded or accompanied by ET 268.

A practical study of symbols and standards used on electrical blueprints and writing diagrams primarily for control circuits.

ET 256. ELECTRONICS IV—TRANSMITTERS. Class 2, Lab. 3, cr. 3. Must be preceded by ET 236.

The study of transmitters, special circuits for wave shaping, filters, UHF, and transmission lines as used in UHF.

ET 257. ELECTRONICS IV—TRANSMITTERS. Class 3, cr. 3. Must be preceded by ET 236.

The study of transmitters, special circuits for wave shaping, filters, UHF, and transmission lines as used in UHF.

ET 264. ELECTRICAL MEASUREMENTS. Class 3, Lab. 3, cr. 4. Must be preceded by ET 176.

A study of the principles of operation and the construction of direct and alternating current measuring instruments. Careful consideration is given to the choice of the best instruments, their possible errors, the means of calibration, and their correct use in industrial situations.

ET 268. CONTROL OF ELECTRIC MOTORS. Class 4, cr. 4. Must be preceded or accompanied by ET 212.

Accelerating relays, protective relays, circuit breakers, controllers, and contractors used in industry are studied. Circuit diagrams for starting, accelerating, and regulating industrial drives are thoroughly analyzed. Controls for adjustable voltage systems are discussed. Dynamic crane and traction controls are included in this course.

ET 272. AUTOMATION AND ELECTRONIC CONTROL. Class 4, Lab. 3, cr. 5. Must be preceded by ET 212 or 208 and by ET 236 for option C. A study of automatic control devices. Included are application of automatic feedback and regulating systems. Induction heating, resistance welding, process timing, motor controls, and associated circuits are also examined.

ET 273. AUTOMATION AND ELECTRONIC CONTROL. Class 5, cr. 5. Must be preceded by ET 212 or ET 208 and by ET 236 for option C.

A study of automatic control devices. Included are application of automatic feed-back and regulating systems. Induction heating, resistance welding process timing, motor controls, and associated circuits are also examined.

ET 276. ELECTRONIC TROUBLE SHOOTING. Lab. 6, cr. 2. Must be preceded by ET 236 and 208 or 224.

Laboratory practice and the use of test instruments in methods of locating faults in AM and FM receivers, television, and industrial circuits.

ET 292. TELEVISION CIRCUITS. Class 3, Lab. 3, cr. 4. Must be preceded by ET 224 and 236.

Study of power supplies, video amplifiers, detectors, synchronization, deflection generator, FM detection, audio amplifiers, alignment, and antennas.

ET 296. COLOR TELEVISION. Class 3, Lab. 3, cr. 4. Must be preceded or accompanied by ET 292.

Principles of color vision, color combination, chromaticity, and color picture tubes. Color transmission by television. Detector matrix and synchronization circuits.

ET 297. COLOR TELEVISION. Class 4, cr. 4. Must be preceded by ET 292.

Principles of color television, color combination, chromaticity, and color picture tubes. Color transmission by television. Detector matrix and synchronization circuits.

UNDERGRADUATE LEVEL

Upper-Division Courses

ET 340. APPLICATIONS OF ELECTRONICS TO INDUSTRY. Class 4, Lab. 3, cr. 5. Must be preceded by ET 104.

Circuits using electron tubes to control or measure, such as resistance welding, elevator leveling, counting, sorting, high-frequency heating, photometric measurements.

ET 396. ELECTRICAL TECHNOLOGY. Class 2-4 and/or Lab. 3-9, cr. 1 to 7. Fee will be charged at the rate of $15 per class hour and $4 per laboratory hour. Hours as arranged with staff.

Primarily for students who have completed the requirements for the Diploma in Applied Technology. Special studies in electrical technology. The primary objective of this course is to provide the advanced student with the opportunity to select and develop individual projects under the supervision of the staff. The student makes use of the knowledge and the many techniques acquired in the basic two-year electrical technology curriculum.

INDUSTRIAL ENGINEERING TECHNOLOGY

Assistant Professors: (Calumet) Malone; (Fort Wayne) Wilson; (Indianapolis) Jenks.

Lecturers: (Calumet) Clark, Grunstein, Hindmarch, Mustafa, O'Connell, Watson, Zimmerman; (Fort Wayne) Clarke, Persing, Hicks; (Indianapolis) Dever, Flagg, Reed, Updike; (Michigan City) Bobillo, Reed, Yoder.

PERSONAL SERVICE COURSES

IT 4. BUSINESS ORGANIZATION. Class 4, cert. units 4, $60.

A survey of industrial and business organization including all staff and line activities. The necessary factors for effective management are also discussed.

IT 10. INTRODUCTION TO DATA PROCESSING. Class 5, Lab. 4, cert. units 7, $121.

All data processing systems, regardless of size or basic use, have certain fundamental operational principles. This course illustrates the development of computer systems from manual methods to the stored program, and is designed to provide a foundation for detailed study of specific systems. Consideration is also given to electric accounting machines, their importance in record keeping, and the concept power and flexibility of the unit record. The significance and scope of a unit record equipment as an independent system will be developed and laboratory exercises will be executed involving planning and wiring a range of unit record equipment.

IT 11. INTRODUCTION TO DATA PROCESSING I. Class 3, Lab. 2, cert. units 4, $68.

First part of IT 10.

IT 12. INTRODUCTION TO DATA PROCESSING II. Class 2, Lab. 2, cert. units 3, $53.

Second part of IT 10.

IT 20. INTRODUCTION TO PROGRAMMING SYSTEMS. Class 2, Lab. 2, cert. units 3, $53. Must be preceded by IT 10 and PS 22 or PS 32.

This introduction to programming systems will familiarize the student with the purpose and function of the various types of systems.

IT 44. ACCOUNTING I—DATA PROCESSING. Class 3, cert. units 3, $45.

This course emphasizes the principles, techniques, and tools of accounting. It provides the necessary background understanding of the mechanics of accounting collecting, summarizing, analyzing, and reporting information about the business. As the mechanics of accounting become well formulated, it is practical to introduce the use of data processing machines in performing the accounting functions within an organization. Case studies are used to effectively impart these concepts.

IT 45. ACCOUNTING II — DATA PROCESSING. Class 3, cert. units 3, $45. Must be preceded by IT 44.

This course emphasizes management uses of accounting information. The emphasis is on accounting as a source of data for management control rather than on bookkeeping skills. Accounting services are shown as they contribute to the recognition and solution of a management problem. The concept of performing accounting services on data processing machines is emphasized throughout the course through the use of case studies.

IT 48. COST ACCOUNTING. Class 3, cert. units 3, $45.

Emphasis on basic nature of cost accounting. Topics such as cost reports, job orders, process and standard cost methods are discussed.

IT 54. DATA PROCESSING APPLICATIONS. Class 2, Lab. 2, cert. units 3, $53. Must be preceded by IT 10.

This course is designed to acquaint the second semester student with business data processing applications. Practical case studies illustrate the use of data processing equipment in various types and sizes of representative companies. The student gains an understanding of the advantages to be realized by the use of machine data processing systems.

IT 64. COMPUTER PROGRAMMING I. Class 2, Lab. 2, cert. units 3, $53. Must be preceded by IT 20.

The student will study the functions and capabilities of a specific data processing machine and will become familiar with some of the tools and raw material necessary for becoming a programmer. He will perform programming drills, exercises, and case studies which will serve to bridge the gap from the theoretical to the real world of data processing. The two-hour per week laboratory session will further reinforce basic principles by providing practical applications.

IT 65. COMPUTER PROGRAMMING II. Class 2, Lab. 2, cert. units 3, $53.

This is a continuation of the IT 64 course. The principles presented in the second semester course of the first year will be employed repeatedly in this course. Programming the tape data processing system will be taught as well as the fundamentals of random access programming.

IT 72. SYSTEMS DEVELOPMENT AND DESIGN. Class 3, Lab. 2, cert units 4, $68.

The effective use of data processing equipment and management sciences in meeting the information needs of business requires that much skill and knowledge be applied to the development and design of data processing systems. The course is designed to guide the student through the three stages in the evolution of a system: Analysis equipment selections, and implementation of the system. The scope of a system development study will vary from a modest payroll procedure to the total information system of a large complex business.

IT 84. ADVANCED PROGRAMMING SYSTEMS. Class 2, Lab. 2, cert. units 3, $53.

Emphasis on providing student with sufficient knowledge of programming systems concepts so that he may easily master any specific system with minimum instruction.

IT 88. COMPUTER PROGRAMMING SCIENCE. Class 2, Lab. 2, cert. units 3, $53.

The student will study functions and capabilities of a specific data processing machine. He will perform programming exercises and drills in data processing as well as consider practical applications and case studies. He will be introduced to tape data processing systems as well as being taught the fundamentals of random access programming.

IT 92. COMPUTER FIELD PROJECT. Class 0, Lab. 4, cert. units 2, $46.

Individual assignments in a selected data processing installation. Emphasis is on giving the student an over-view of practical data processing.

UNDERGRADUATE LEVEL

Lower-Division Courses

IT 104. INDUSTRIAL ORGANIZATION AND PRODUCTION. Class 4, cr. 4. This course not open to students who have completed IT 105 and/or IT 106.

A detailed survey of organizational structures; operational, financial, marketing, and accounting activities; duties of management, planning, control, personnel, safety, wages, policy, and human factors necessary for effective management.

IT 105. INDUSTRIAL ORGANIZATION AND PRODUCTION—PART I. Class 2, cr. 2. This course not open to students who have completed IT 104.

A survey of the growth and fundamental concepts of American industry which includes a study of internal organization, managerial controls, risk and forecasting, financing, research, productive development, production planning, plant facilities, and production and material control. Knowledge of these factors is necessary for the effective management of an enterprise.

IT 106. INDUSTRIAL ORGANIZATION AND PRODUCTION—PART II. Class 2, cr. 2. This course not open to students who have completed IT 104.

A survey of the fundamental concepts connected with quality control, plant engineering, methods improvement, industrial relations, personnel, management, training, motivation, wages, marketing, advertising and sales. Knowledge of these factors is necessary for the effective management of an enterprise.

IT 110. ELECTRONIC DATA PROCESSING. Class 3, cr. 3.

An introduction to data processing through the use of punched card and high-speed computor equipment. Surveys computors, techniques of problem solving and programming, typical computor applications and evaluation of proposed systems.

IT 120. SYSTEMS AND PROCEDURES. Class 3, cr. 3.

An introduction to the systems concept. Surveys recognizing and defining the system's problem; the management audit and tools for systems analysis; design and control of forms, work simplification, work measurement and procedures; operations research; punched card systems; management and administration; and organization of the systems function.

IT 152. HUMAN RELATIONS IN INDUSTRY. Class 3, cr. 3.

Study of the bases of human relations and the organization of individual and group behavior. Special emphasis on typical industrial and business relationships in everyday situations. Examines fundamental relationships between behavior and personal and group forces.

IT 200. COMPUTOR PROGRAMMING FUNDAMENTALS. Class 3, cr. 3.

The descriptive presentation of the basic elements of programming digital computors. There is a treatment of absolute and symbolic coding or instruction; addressing; editing; printing control; magnetic tape functions; random access and sequential processing; and mathematical and universal programming concepts.

IT 204. TECHNIQUES OF MAINTAINING QUALITY. Class 2, Lab. 3, cr. 3. Must be preceded by IT 104 and preceded or accompanied by MA 112.

An analysis of the basic principles of inspection and the study of the various techniques and types of equipment connected with inspection processes. Includes methods of using mechanical, electronic, air and light devices for checking and measuring and other related techniques to determine quality levels of acceptance.

IT 208. INTEGRATED SYSTEMS ANALYSIS. Class 3, cr. 3.

Presents the concept of the management operating system; the organization as a system's model; operation research; systems administration; information and automatic production; selection, training, and organization of personnel; and project teams within the formal structure.

Industrial engineering technology students study time and motion problems.

IT 212. INDUSTRIAL SAFETY. Class 2, cr. 2. Must be preceded by IT 104.

Safety fundamentals as related to the economics of accident prevention, analysis of accident causes. mechanical safeguards, fire prevention, plant housekeeping, occupational diseases, first aid, safety organization, protective equipment, and the promotion of safe practices.

IT 224. PRODUCTION PLANNING AND CONTROL. Class 3, Lab. 3, cr. 4. Must be preceded by DM 180 and IT 152.

Preproduction planning of the most economical methods, machines, operations, and materials for the manufacture of a product. The planning, scheduling, routing, and detailed procedure of production control.

IT 227. PRODUCTION PLANNING AND CONTROL. Class 3, cr. 3. Must be preceded by DM 180 and IT 152.

Preproduction planning of the most economical methods, machines, operations, and materials for the manufacture of a product. The planning, scheduling, routing, and detailed procedure of production control. (Same as IT 224 without laboratory.)

IT 244. FUNDAMENTALS OF PRODUCTION COST. Class 1, Lab. 3, cr. 2. Must be preceded by IT 104.

Fundamental mechanics (rules for debit and credit) of accounting, principles of account classification, business forms and procedures, financial and operating statements, and elements of cost accounting—all from the viewpoint of industrial organization.

IT 248. PRODUCTION COST ANALYSIS. Class 1, Lab. 3, cr. 2. Must be preceded by IT 244.

Specific applications of production cost theories to principles developed through study of selected case problems.

IT 250. FUNDAMENTALS OF PRODUCTION COST ANALYSIS. Class 2, Lab. 3, cr. 3. Must be preceded or accompanied by IT 104 except by approval of the Technology Chairman.

Surveys of fundamental mechanics of accounting principles of account classification, financial and operating statements, and the generation of cost data according to cost accounting principles. Surveys the generation of cost data according to the principles of engineering economy. Examines applications of cost accounting data and engineering economy cost data to specific management decision areas through selected case problems.

IT 260. MOTION AND TIME STUDY. Class 2, Lab. 3, cr. 3. Must be preceded by IT 152, DM 180, and MA 112.

Techniques of motion and time study, process charts, operation charts, multiple activity charts, micromotion study, therbligs, and stop-watch time study.

IT 262. MOTION STUDY AND WORK METHODS. Class 2, Lab. 3, cr. 3. Must be preceded by IT 152 and preceded or accompanied by MA 112 or equivalent.

The study of the various techniques of motion study including process charts, operation charts, multiple activity charts, micro and memo motion study, therbligs, the movie camera, along with actual practice in their use. Includes study and application of the basic principles used to develop better methods of performing work.

IT 266. WORK MEASUREMENT AND INCENTIVES. Class 2, Lab. 3, cr. 3. Must be preceded by IT 262.

A study of the fundamentals of time study and work measurement with actual practice in their use. Includes stop watch time study, measuring work with movie camera, the establishment of allowances by both stop watch and work sampling studies, the establishment and use of predetermined time values, and the construction and use of work measurement formulae.

IT 268. PLANT LAYOUT. Class 2, Lab. 3, cr. 3. Must be preceded by EG 110, IT 224 and 260.

Arrangement of stock, machines, layout of aisles, and use of space, and material handling for the highest efficiency of production.

IT 272. JOB EVALUATION. Class 2, cr. 2. Must be preceded by IT 152 and MA 112.

A survey of the basic principles and significance of job evaluation. An analysis of current practices and techniques used in job analysis, job descriptions, and job evaluation.

IT 280. WAGE INCENTIVES. Class 2, cr. 2. Must be preceded by IT 260 and 272.

An analysis and study of various types of wage incentive plans, their significance, adaptability, effectiveness, and equitability. A systematic appraisal of the basic objectives and currently used techniques in the administration of wage incentive programs.

IT 296. INDUSTRIAL TECHNOLOGY CASE PROBLEMS. Class 2, cr. 2.

Application of theories developed in the several industrial technology courses to selected general case problems—to provide practice in the integration of principles.

UNDERGRADUATE LEVEL

Upper-Division Courses

IT 312. MATERIALS HANDLING. Class 3, cr. 3. Must be preceded by IT 104.

A survey of materials handling elements, the unit load, packaging, bulk handling, the economics of materials handling, improving existing handling methods, justification for handling equipment, special handling techniques, and the management of the materials handling divisions in the industrial organization.

IT 324. PRODUCTION TECHNIQUES. Class 3, cr. 3. Must be preceded by IT 224.

Continuation of operation planning with emphasis upon the equipment, tools, and techniques used in mass production. Adaptation of proposed plans to conform to existing facilities.

IT 340. COST CONTROL. Class 3, cr. 3.

Standard costs, estimating costs, distribution costs, various systems of cost accounting.

IT 356. PERSONNEL PROBLEMS IN INDUSTRY. Class 2, cr. 2. Must be preceded by IT 152.

Analysis of selected case problems, with emphasis on attitudes, philosophies, and responsibilities of supervisory personnel in relationship to the worker.

IT 360. ADVANCED MOTION AND TIME STUDY. Class 3, Lab. 3, cr. 4. Must be preceded by IT 260.

Operation analysis, micromotion study, simo and possibility charts, standard data, and formula construction.

IT 368. LEGISLATION AFFECTING INDUSTRIAL RELATIONS. Class 4, cr. 4.

Wage contracts and payments, workmen's compensation and insurance, injunction, strikes and boycotts, and statutes affecting labor.

IT 396. INDUSTRIAL TECHNOLOGY. Class 2-4 and/or Lab. 3-9, cr. 1 to 7.

Fee will be charged at the rate of $15 per class hour and $4 per laboratory hour.

Hours as arranged with staff. Primarily for students who have completed the requirements for the Diploma in Applied Technology. Special studies in industrial technology.

NURSING

Associate Professor: (Lafayette, Associate Degree Program) Johnson in charge.

Assistant Professor: (Calumet, Practical Nursing) Maginsky in charge; (Lafayette, Associate Degree Program) Stokes, Walker.

Instructors: (Calumet) Clayton, Doyle; (Lafayette) Timmins.

PERSONAL SERVICE COURSES

NT 8. VOCATIONAL ETHICS AND PERSONAL HYGIENE. Class 6, cert. units 6, $38.

Designed to give the practical nursing student an understanding of ethical and interpersonal relationships with the patient, family, physician, professional nurse, and other coworkers. Includes development of an understanding of the patient's needs by making the student nurse aware of her own physiological, psychological, and community needs.

NT 16. FAMILY LIVING. Class 5, Lab. 4, cert. units 7, $74.

Deals with the basic principles for successful family life, with special emphasis on the role of the practical nurse when caring for a patient in his home. Stresses food preparation, meal planning and buying, serving of regular and special diets, budgeting, and organization of home duties in order to provide a clean and wholesome environment for the sick.

Includes normal child development and problems of the aged, with emphasis on the health needs of these two age groups, and the necessity for planned activities to give them security and enrich their lives.

NT 24. NURSING CARE. Class 5, Lab. 11, cert. units 10, $63.

Develop skills necessary to give nursing care to the subacute, convalescent, and chronically ill patient, together with an understanding of the basic principles involved. Demonstration and practice of nursing skills form a major portion of this course.

Knowledge of normal pregnancy and common illness is included, together with nursing measures required in these specific conditions.

NT 44. MEDICAL CLINICAL EXPERIENCE. 8 weeks. Class 4, Lab. 36, cert. units 11, $10.

Practical application of acquired nursing skills in the care of the medical patient in the hospital. Classroom instruction includes specialized medical techniques which have not been covered in the preclinical period.

This course is given at Methodist Hospital—Gary, Indiana.

NT 56. SURGICAL CLINICAL EXPERIENCE. 8 weeks. Class 4, Lab. 36, cert. units 11, $10.

Practical application of acquired nursing skill in the care of the surgical patient in the hospital. Classroom instruction includes specialized surgical techniques which have not been covered in the preclinical period.

This course is given at St. Catherine's Hospital—East Chicago, Indiana.

NT 64. MATERNITY CLINICAL EXPERIENCE. 8 weeks. Class 4, Lab. 36, cert. units 11, $10.

Practical application of acquired nursing skills in the care of mothers and newborn infants in the hospital. Includes two week's experience in the labor and delivery room. Classroom instruction includes specialized maternity and nursery techniques which were not covered in the preclinical period.

This course is given at St. Margaret's Hospital—Hammond, Indiana.

NT 72. PEDIATRICS AND LONG-TERM ILLNESS CLINICAL EXPERIENCE. 8 weeks. Class 4, Lab. 36, cert. units 11, $10.

Practical application of acquired nursing skills in the care of children and patients whose conditions require long-term hospitalization. Classroom instruction includes specialized nursing techniques, applicable to these patients, which were not covered in the preclinical period.

This course is given at St. Mary's Mercy Hospital—Gary, Indiana.

UNDERGRADUATE LEVEL

Lower-Division Courses

NT 110. INTRODUCTION TO NURSING. Class 3, Lab. 6, cr. 5.

An orientation course to nursing as a practice and as a profession. Designed to provide a basic understanding of the individual's needs in health and illness and to develop skills for the comfort and safety of the patient.

NT 111. MEDICAL-SURGICAL NURSING I. Class 4, Lab. 12, cr. 8.

A continuation of NT 110. The clinical experience is centered around student opportunity to identify and work with important nursing problems that confront patients with medical and surgical conditions. The commonality of problems as they relate to nursing rather than as they relate to diagnosis is stressed.

NT 204.

NT 205. MATERNAL AND CHILD NURSING I AND II. Class 2, Lab. 12, cr. 3. Class 3, Lab. 9, cr. 6.

Background material in maternal and child health, including concepts of growth and development. Experience in the obstetric unit, in the nursery school, and in the pediatric unit. Emphasis on the understanding of the obstetric and pediatric patient in relation to the family from which they come and to which they will return.

NT 212.

NT 213. MEDICAL-SURGICAL NURSING II AND III. Class 2, Lab. 9, cr. 5. Class 4, Lab. 12, cr. 8.

A continuation of NT 111. Diet therapy is integrated throughout. Course content moves from the normal to the abnormal; from the simple to the complex, Emphasis in the second unit will be on learning to give care to patients who require extensive and complicated nursing.

Practice in specialized units will be used for its application to all nursing situations. Understandings of the nurse's responsibilities and functions as a team member are included. Rehabilitative and preventive principles are integrated throughout.

NT 220. PSYCHIATRIC NURSING. Class 2, Lab. 6, cr. 4.

Classroom and clinical experience with the various problems prevailing in the care and treatment of psychiatric patients. Major emphasis is placed upon interpersonal relationships, group relationships, the impact of hospital cultural patterns on patient therapy, newer methods of treatment, and the community aspects of the mental health problem.

NT 250. SEMINAR IN NURSING. Class 2, Lab. 0, cr. 2.

Emphasis is placed upon the identification of nursing problems presented by patients, by using the student's cumulative theoretical and experiential background in the solution of nursing problems and the development of principles of nursing care.

MISCELLANEOUS CONTINUATION AND SPECIAL SERVICE COURSES

GENERAL STUDIES

Professor McNelly in Charge

Assistant Professor: (Calumet) Bowser, Malone; (Fort Wayne) Poling; (Indianapolis) Ernst.

Associate Professors: (Calumet) Hays; (Michigan City) Nunn.

Lecturers: (Calumet) Iaconnetti, Norris; (Fort Wayne) Stuart; (Indianapolis) Briggs.

PERSONAL SERVICE COURSES

GN 8. COMMUNICATION SKILLS. Class 3, cert. units 3, $45.

A basic course designed to develop competence in written expression.

GN 22. TECHNICAL REPORT WRITING. Class 3, cert. units 3, $45.

Application of the principles of clear and concise writing to the solution of industrial and technical communication problems. Emphasis is on graphical and other presentation techniques.

GN 24. ELEMENTARY PSYCHOLOGY. Class 3, cert. units 3, $45.

Fundamental principles of psychology. Emphasis on behavior covering such subjects as personality, emotions, intelligence, learning and perception.

GN 34. UNITED STATES AND ITS PLACE IN WORLD AFFAIRS. Class 3, cert. units 3, $45.

A survey of the growth of the United States from 1865 to the present. Problems such as industrialization, trade, agrarian problems, depressions and wars are discussed.

GN 44. INTRODUCTORY SOCIOLOGY. Class 3, cert. units 3, $45.

An introduction to the science of human society. Emphasis on such fundamental concepts as description and analysis of society, culture, social institutions and social change.

GN 52. PHYSICAL EDUCATION. Lab. 1-3. cr. 0, $9 to $27.

In centers where facilities are available, students may avail themselves of instruction in intramural activities.

GN 54. INTRODUCTION TO GOVERNMENT. Class 3, cert. units 3, $45.

A basic course in the development of government in the United States. Other democratic governments in the world are also included.

GN 60. ECONOMICS. Class 3, cert. units 3, $45.

Basic principles of economics and their application to our industrial society.

GN 64. PHYSICAL EDUCATION. Lab. 1-3, cr. 0, $9 to $27.

In centers where facilities are available, students may avail themselves of instruction in intramural activities.

GN 82. MONEY AND BANKING. Class 3, cert. units 3, $45.

Introduction to the organization and operation of the money and banking system in the United States.

GN 84. INSURANCE. Class 3, cert. units 3, $45.

A survey of the various types of insurance such as life, health, accident and social insurance for old age unemployment and disability.

UNDERGRADUATE LEVEL

Lower-Division Courses

GN 100. TECHNICAL INSTITUTE ORIENTATION LECTURES. Class 1, cr. 1. Required for all full-time students and must be taken first semester of enrollment.

The organization and services of the university related to the student. The relationships of the engineers, technicians, and tradesmen to one another and to industry. The development and function of the technical institutes and of the separate technologies. Guidance in adapting to the university and preparation for industrial jobs.

GN 104. ENGLISH GRAMMAR AND COMPOSITION. Class 2, cr. 2.

A concentrated view of basic principles of grammar with use of these principles in original written composition. Written and oral work will be stressed early in this course in order that both fields of communication be closely integrated prerequisite to the demands of technical report writing.

GN 120. PSYCHOLOGY. Class 2, cr. 2.

Basic fundamentals of psychology and their application to industrial personnel problems. This course particularly serves as a basis for the consideration of human behavior problems confronting industrial supervision.

GN 204. FUNDAMENTALS OF PRACTICAL SPEAKING. Class 2, cr. 2.

Organization and presentation of material, voice and physical delivery, audience reaction.

GN 220. TECHNICAL REPORT WRITING. Class 3, cr. 3.

Extensive application of the principles of good writing in industrial reporting, with emphasis on the techniques of presenting information graphically as well as in a clear, concise written form.

***GN. 232. DEMOCRATIC GOVERNMENT.** Class 2, cr. 2.

A study of the development of democratic government in the U.S. and other democratic areas of the world.

GN 240. LABOR RELATIONS PROBLEMS. Class 3, cr. 3.

Problems of workers with possible solutions as suggested by organized labor and management. Regulations concerning management, labor, the collective bargaining agreement, grievance and arbitration procedures.

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* GN 268. Elements of Law, may be substituted for GN 232.

GN 260. ECONOMICS OF INDUSTRY. Class 2, cr. 2.

Fundamental economics principles which affect everyone, with particular emphasis upon their application to industry.

GN 264. CONFERENCE SPEAKING. Class 2, cr. 2. Must be preceded by GN 204.

Training and practice in conducting and participating in small group conferences, shop committees, instructional groups, problem-solving groups.

GN 268. ELEMENTS OF LAW. Class 3, cr. 3.

An introductory law course, with a brief comparison of the American federal system and the parliamentary system of government; and covering law, with emphasis on judicial review, court jurisdiction, and procedure generally and basic law in particular.

PHYSICAL SCIENCES

Professor McNelly in charge

Instructor: (Calumet) Susienka.

Lecturers: (Calumet) Adams, Belovich, Bradford, Carlson, Geiger, Kaminski, Minter, Ranck, Stone, Wallace, Ellis, Douglas, Griffith, Mayette, Selky, Smelter, Wagenblast, Welty; (Fort Wayne) Statz; (Indianapolis) Kern, Strebe.

PS 6. CHEMISTRY OF STEEL I. Class 4, cert. units 4, $60. Must be preceded or accompanied by PS 30.

General basic principles of chemistry necessary to understand the various processes in the manufacture of steel.

PS 22. DATA PROCESSING MATHEMATICS I. Class 2, cert. units 2, $30.

The language of business has numerical bases. This course provides the necessary foundation in numerical concepts for the study of accounting and machine processes. It is the first of two mathematics courses designed specifically for business data processing. One year of high school algebra is the required background for this class.

PS 23. DATA PROCESSING MATHEMATICS II. Class 2, cert. units 2, $30. Must be preceded by PS 22 or equivalent.

Data Processing Mathematics II is a continuation of PS 22, Data Processing Mathematics I. Numbers systems, forms, and methods basic to data processing are continued and extended.

PS 30. APPLIED MATHEMATICS I. Class 1-5, cert. units 1-5.

Fundamental concepts of elementary algebra and geometry of mensuration. Applications.

PS 32. COMPUTER MATHEMATICS I. Class 5, cert. units 5, $75.

The engineer or scientist designs or selects mathematical models of systems within his field which are suitable to the problem at hand. The computer technician must be able to read and understand this mathematics and translate it into computational processes. The purpose of all the mathematics courses in the curriculum is to provide this necessary knowledge of the language of science and engineering. The numerical, rather than the theoretical solution of problems is emphasized.

PS 33. COMPUTER MATHMATICS II. Class 3, cert. units 3, $45. Must be preceded by PS 32 or equivalent.

The purpose of this course is to provide a knowledge of the language of calculus with sufficient theoretical understanding to calculate from given data and given systems of mathematical formulas.

PS 34. COMPUTER MATH I. Class 3, cert. units 3, $45.

First half of PS 32.

PS 35. COMPUTER MATH I. Class 3, cert. units 3, $45.

Second half of PS 32.

PS 40. PHYSICS: MECHANICS, HEAT, AND ELECTRICITY. Class 3, cert. units 3, $45. Must be preceded by PS 60.

Basic principles of mechanics, properties of materials, and selected elements of heat related to practical applications in steel mills. Includes units, vectors, torque, velocity and acceleration, force and motion, rotation of rigid bodies, uniform circular motion, friction, work and power, energy momentum, elastic properties of solids, liquids at rest, fluids in motion, properties of gases, and selected elements of heat. Emphasis on vectors, torque, and elastic properties of solids.

PS 42. PHYSICAL SCIENCE I. Lect. 2, Rec. 2, Lab. 2, cert. units 4, $68.

Basic principles of electricity, both DC and AC and their application are emphasized. Sound and light theory are also considered.

PS 43. PHYSICAL SCIENCE II. Lect. 2, Rec. 2, Lab. 2, cert. units 4, $68.

Elementary principles of mechanics such as power, efficiency of machines and their application are discussed. Solids, gases and liquid equilibrium conditions are discussed. Motion in straight line and rotation are also considered.

PS 45. PHYSICS: BASIC ELECTRICITY. Class 2, cert. units 2, $30.

Survey of basic electricity, with emphasis on industrial application.

PS 46. PHYSICS: MECHANICS. Class 2, cert. units 2, $30.

Basic principles of mechanics, properties of materials, and selected elements of heat related to practical applications in steel mills. Includes units, vectors, torque, force and motion, power, and elastic properties of solids.

PS 50. APPLIED MATHEMATICS II. Class 1-5, cert. units 1-5.

Fundamental concepts and techniques of algebra with applications to industrial problems.

PS 52. PHYSICS: MECHANICS AND ELECTRICITY. Class 4, cert. units 4, $60.

Basic principles of mechanics and selected elements of electricity and magnetism. Basic principles are related to practical applications in steel mills. Covers vectors, torque, velocity and acceleration, force and motion, friction, work and power, energy, rotation of rigid bodies, momentum, uniform circular motion, vibratory motion, elastic properties of solids, liquids, fluids in motion, properties of gases, molecular theory of matter, static electricity, DC circuits, electrical energy and power, magnetism, electro-magnetic induction, transformers, generators and motors, capacitance, alternating currents, and rectifiers.

PS 60. APPLIED MATHEMATICS III. Class 1-5, cert. units 1-5.

Fundamental concepts and techniques of algebra and trigonometry necessary for related courses and work.

PS 62. COMPUTER MATHMATICS III. Class 3, cert. units 3, $45. Must be preceded by PS 33 or equivalent. Continuation of PS 33.

PS 68. NUMERICAL ANALYSIS I. Class 1, Lab. 4, cert. units 3, $61.

This course provides the knowledge of numerical methods necessary for finding solutions to mathematical equations and for analysis of tabulated data. It is a laboratory course, consisting chiefly of the solution of specific problems by computer programming and other methods.

PS 69. NUMERICAL ANALYSIS II. Class 2, Lab. 2, cert units 3, $53.

This is a continuation of Numerical Analysis I.

PS 70. APPLIED MATHEMATICS IV. Class 1-5, cert. units 1-5.

Fundamental concepts and techniques of trigonometry with applications.

PS 72. CONTROL OF QUALITY IN STEEL PRODUCTION. Class 2, cert. units 2, $30.

Fundamentals of the control of quality in steel production.

PS 82. INTRODUCTION TO STATISTICS. Class 2, Lab. 2, cert. units 3, $53.

Basic principles of both descriptive and comparative statistics are emphasized. The concept of central tendency as measured by the mode, median and mean are stressed. Various measures of scatter such as range and standard deviation are discussed. The concepts random sampling, correlation coefficients and tests of significance are introduced.

PS 84. APPLIED STATISTICS. Class 2, Lab. 2, cert. units 3, $53. Must be preceded by PS 82.

Emphasis on application of information discussed in PS 82. Computer utilized to solve statistical problems such as correlation coefficients, standard deviation, means and other descriptive statistics. Problems in sampling statistics are also considered.

UNDERGRADUATE LEVEL

Lower-Division Courses

PS 120. INTRODUCTION TO CHEMISTRY. Class 2, Lab. 3, cr. 3. Must be preceded or accompanied by MA 111.

The general basic principles of chemistry, including a study of important elements and their simpler compounds. Special emphasis is placed on industrial applications.

PS 136. PHYSICS: MECHANICS AND HEAT. Lect. 2, Rec. 2, Lab. 2, cr. 4. Must be preceded or accompanied by MA 111 and EG 113.

Work, energy, power, efficiency of simple machines; equilibrium conditions for solids, liquids, and gases; straight line and rotational motion—uniform and accelerated motion. Elementary principles of heat and their technical applications.

PS 176. PHYSICS: ELECTRICITY, SOUND, AND LIGHT. Lect. 2, Rec. 2, Lab. 2, cr. 4. Must be preceded by PS 136, except ET students.

Fundamental principles of electricity, wave motion, sound, and light.

PS 204. FUNDAMENTALS OF QUALITY CONTROL. Class 2, cr. 2. Must be preceded by MA 111 and 112.

Frequency distributions, normal curve, average standard deviation, standard error of the mean, x and R charts, "u" chart, rational sub-group, statistical aspects of tolerances, and the basic concepts of probability.

PS 284. INSTRUMENTATION. Class 2, Lab. 3, cr. 3.

Basic principles of instruments selected. Care and use as found in industry for physical measurement.

PS 324. ADVANCED TOPICS IN QUALITY CONTROL I. Class 2, cr. 2. Must be preceded by PS 204.

Sampling plans including Dodge Romig, MIL, Std. 105 and sequential, line of best fit, grouped and ungrouped linear correlation, standard error of the estimate, and significance of differences.

PS 364. ADVANCED TOPICS IN QUALITY CONTROL II. Class 2, cr. 2. Must be preceded by PS 204 and preceded or accompanied by PS 324. Confidence limits, analysis of variance, multiple correlation, chi square applications, and curve fitting.

DEPARTMENT OF INDUSTRIAL EDUCATION

Professor Belman in charge

Professors: Belman, Greenberger.
Professor Emeriti: Highlen, McComb.
Associate Professors: Bush, Eddy, Hill.
Assistant Professors: Carrel, Drew, Householder.
Instructor: Hull.
Graduate Research Assistants: de la Cruz, Windle.
Graduate Assistants: Johnson, Manning, Newton.

UNDERGRADUATE LEVEL

Lower-Division Courses

260. PRINCIPLES AND OBJECTIVES OF INDUSTRIAL EDUCATION. Sem. 1 and 2, Class 3, cr. 3. (4 IED.)

Historical, legislative, and theoretical foundations of industrial education; objectives of the various types of schools and programs.

262. SUPERVISED WORK EXPERIENCE. Sem. 1 and 2. SS. cr. 3-9.

Supervised work experience in accordance with the individual student's career objective. Craft, technical, or general industrial work experience, participating in supervisor training programs, and assistance with conducting industrial training programs, are typical examples of acceptable experiences.

UNDERGRADUATE LEVEL

Upper-Division Courses

374. TRAINING OF SUPERVISORS. Sem. 1 and 2. Class 3, cr. 3. (5 or 6 IED.)

Introduction to and overview of the supervision occupation. Functions, educational and other characteristics, relationship to training, ways and means of training supervisors. Professor Greenberger.

375. BASIC METHODS OF INDUSTRIAL TRAINING. Sem. 1 and 2. Class 3, cr. 3. (5 and 6 IED.) Must be preceded by ED 285.

Principles, practices, and variations of basic methods of instruction as related to training situations in business and industry. Professor Drew.

467. SCHOOL SHOP MANAGEMENT. Sem. 1. Class 3, cr. 3. (7 IED.)

The school shop and drawing room, including equipment and management. Layout, selection, and arrangement of equipment and supplies; methods of organization and management.

474. CONFERENCE LEADERSHIP TRAINING. Sem. 1 and 2. SS. Class 2, Lab. 2, cr. 3 or Class 1, Lab. 2, cr. 2.

Training by the conference method, making use of devices, techniques, and material necessary to the work of the conference leader. Professors Hill and Greenberger.

DUAL LEVEL-UNDERGRADUATE AND GRADUATE

510. COURSE CONSTRUCTION IN VOCATIONAL-INDUSTRIAL-TECHNICAL EDUCATION. Sem. 1 and 2. SS. Class 3, cr. 3. (7 or 8 IED.) Must be preceded by ED 285 and IED 375 or permission must be granted by the instructor.

Principles of, and practice in, planning, organizing, and developing instructional content, methods, activities, and materials related to instruction in a particular subject in vocational-industrial-technical education and training situations. Professor Drew.

564. TESTS AND MEASUREMENTS IN INDUSTRIAL EDUCATION. Sem. 1 and 2. SS. Class 2, Lab. 2, cr. 3. Must be preceded by PSY 500 or equivalent.

Designed for industrial education students as an alternative course for ED 504. Concepts involved in testing and measuring, with applications in industry and industrial education.

566. EDUCATIONAL AND INDUSTRIAL COORDINATION. SS. Class 3, cr. 3. Senior standing or consent of instructor required.

Common problems of education and industry, with emphasis on the development and maintenance of close correlation between school programs of industrial vocational education and the manpower needs of industrial organizations. Professor Eddy.

568. INSTRUCTION MATERIALS FOR TRADES AND INDUSTRIES. SS. cr. 1-6. Must be preceded by PSY 120, and ED 285, 304, 460, or by permission of the instructor. (Not more than three hours may be accepted toward an advanced degree.)

Application of governing principles to establish an effective arrangement of teaching content required for occupational courses in vocational schools and classes. Professor Drew.

570. TECHNICAL EDUCATION IN AMERICA. Sem. 1 and 2. SS. Class 3, cr. 3.

Technical education in the American economic and political system, including its role and purpose, history, administrative and organizational patterns, student characteristics, problems, potentialities. Proefssor Drew.

571. HISTORY AND PHILOSOPHY OF INDUSTRIAL EDUCATION. Sem. 1 and 2. SS. Class 3, cr. 3. (8 or Gr.).

A study of the leaders, agencies, and movements that have contributed to the development of industrial education with special attention to the economic, social, and philosophical factors that have motivated and influenced this development in America. Professor Householder.

572. PART-TIME AND EVENING-SCHOOL PROGRAMS IN INDUSTRIAL EDUCATION. Sem. 1. SS. cr. 1-3. (el. 8 IED). Senior standing or special permission of instructor required.

Problems faced by coordinators, supervisors, and administrators in operating part-time and evening schools, with special emphasis on public relations, teacher selection, in-service training, buildings, and equipment.

574. PRINCIPLES AND PRACTICES OF TRAINING IN INDUSTRY. Sem. 1. SS. Class 2, Lab. 2, cr. 3, or Class 1, Lab. 2, cr. 2. Senior standing or special permission of instructor required.

Historical development; basic principles of training; the areas of industrial training; the principles and practices of training program development and presentation; review of specific training activities and programs. Professor Greenberger.

576. COOPERATIVE EDUCATION PROGRAMS. Sem. 1. SS. Class 3, cr. 3. Senior standing or consent of instructor required.

History and development of cooperative education, underlying principles and theories, operating practices and programs, administrative and legal aspects. Professor Eddy.

577. ORGANIZATION AND ADMINISTRATION OF INDUSTRIAL TRAINING. SS. Sem. 1 and 2. cr. 2 or 3. Must be preceded by IED 574.

Organization of the training function; the relationship of the training department to other departments of the plant; the evaluation of training; administrative practices; the selection and education of training personnel; professional and nonprofessional activities of training personnel. Professor Greenberger.

590. **INDIVIDUAL RESEARCH PROBLEMS.** Sem. 1 and 2. SS. cr. 1-6 (el.). Must have consent of department.

Opportunity for students to study particular problems in any phase of industrial education or to initiate themselves into research techniques under the guidance of a member of the staff. Does not include thesis work.

GRADUATE LEVEL

637. **ORGANIZATION AND ADMINISTRATION OF VOCATIONAL EDUCATION.** cr. 1-4.

666. **SUPERVISION OF INDUSTRIAL EDUCATION.** cr. 3.

667. **SUPERVISED FIELD PRACTICE IN INDUSTRIAL TRAINING.** cr. 3.

668. **SEMINAR IN VOCATIONAL TRADE AND INDUSTRIAL EDUCATION.** cr. 2-4.

696. **RESEARCH IN TRADES AND INDUSTRIES.** cr. 1-6.

COURSES ADMINISTERED OUTSIDE THE DIVISION OF APPLIED TECHNOLOGY

The courses listed below are offered by four of the schools of the University and are the ones commonly taken by applied technology students as requirements, optional courses, or electives.

Biology

BIOL 201. **BIOLOGY OF MAN.** Class 2, cr. 2.

Introduction to human biology with emphasis on anatomy and physiology.

BIOL 202. **LABORATORY IN HUMAN BIOLOGY.** Lab. 2, cr. 1.

Continuation of BIOL 201.

BIOL 203. **BIOLOGY OF MAN.** Class 2, cr. 2.

Continuation of BIOL 201.

BIOL 204. **LABORATORY IN HUMAN BIOLOGY.** Lab. 2, cr. 1. Must be accompanied by BIOL 203.

BIOL 220. **INTRODUCTION TO MICROBIOLOGY.** Class 2, Lab. 2, cr. 3. Must be preceded by one semester of general chemistry and one semester of a life science.

The isolation, growth, structure, functioning, heredity, identification, classification, and ecology of microorganisms, their role in nature and significance to man.

Chemistry

CHM 119. **GENERAL CHEMISTRY.** Class 2, Lab. 3, cr. 3 (offered only in nursing programs).

Consideration of certain general principles of inorganic, organic and physiological chemistry. Emphasis is placed on application of these principles in fulfilling the responsibilities of nursing.

Civil Engineering

EG 110. **DRAFTING FUNDAMENTALS.** Class 1, Lab. 6, cr. 3.

A basic course in drawing; orthographic projection, pictorial drawing, print reading, and reproduction of drawings. Problems designed to require practical reasoning and develop good techniques.

EG 111. **ADVANCED DRAFTING.** Class 1, Lab. 6, cr. 3. Must be preceded by CES 110.

Preparation of assembly and detail drawings, including fasteners, limit dimensioning, and shop notes. Intersections and developments with sheet metal applications. Symbols and construction details used in architectural drafting.

EG 112. **LAYOUT, LETTERING, AND TYPOGRAPHY.** Class 1, Lab. 6, cr. 3.

History and forms of principal alphabets. Practice in hand lettering to include the engineering alphabet and main display alphabets. Practice in use of mechanical lettering devices. Layout of simple pages and posters including illustrations and type.

EG 113. SLIDE RULES AND GRAPHS. Lab. 2, cr. 1. Must be preceded or accompanied by MA 112 or 151.

Principles and use of the slide rule for division, multiplication, trigonometry, powers, and roots. Properties and types of coordinate graphs for scientific and engineering purposes; calculating and plotting graphs; uniform, log, semi-log, and others.

EG 210. INDUSTRIAL SKETCHING. Lab. 6, cr. 2. Must be preceded by EG 111.

The application of freehand sketching on paper and the blackboard to industrial problems in representation and design using axonometric, oblique, perspective, and multiview drawings. Laboratory problems include drawing from the object, layout from notes, and simple design problems. Introduction to shade and shadow and artist's perspective.

EG 212. DESCRIPTIVE GEOMETRY. cr. 2 or cr. 3. Must be preceded by EG 110, or EG 118.

Relations of points, lines, and planes and their graphical representation. Intersections and developments of plane and curved surfaces. Graphical synthesis as applied to layout, delineation, and solution of spatial problems. Warped and double-curved surfaces.

EG 213. FREEHAND SKETCHING. Lab. 6, cr. 2.

Line sketching and shading in pencil and charcoal of objects as they appear to the eye.

EG 311. INDUSTRIAL ARTS DESIGN. Lab. 6 to 9, cr. 2 or 3; or Class 1, Lab. 6, cr. 3. Must be preceded by EG 111.

A basic course in design applied to shop projects. Laboratory problems include instruction in various mediums and crafts used in designing utilitarian objects for improved appearance and use.

EG 312. SHADES, SHADOWS AND PERSPECTIVE. Class 1, Lab. 6, cr. 3. Must be preceded by EG 110, EG 118, or 313.

Graphic representations of shades and shadows on buildings and geometric forms. Parallel and angular perspective. Use of color in rendering.

EG 315. GRAPHICAL PRESENTATION OF DATA. Lab. 6, cr. 2.

Different kinds and types of charts, graphs, and diagrams. Considerations in plotting scientific data. Preparation of finished art for reproduction.

EG 317. PRODUCTION ILLUSTRATION. Lab. 6, or Class 1, Lab. 6, cr. 2 or 3.

To give the student a good knowledge of and some experience in graphical construction and some rendering techniques necessary to produce accurate pictorial drawings suitable for catalogs, production planning, and design analysis.

EG 318. PROJECTS IN TECHNICAL ILLUSTRATION. Class 1, Lab. 6, cr. 3. Must be preceded by EG 311.

Directed work in initial planning, production, and completion of finished art for industrial brochures, catalogs, and other industrial publications. Additional instruction in keylining, color separation, and other techniques used in industrial publications.

Economics

ECON 210. PRINCIPLES OF ECONOMICS. Class 3, cr. 3.

Study of the basic economic institutions, such as business, labor organizations, banks, and government. Analysis of the effects of competition, monopoly, and government on allocation of resources in production and consumption; factors affecting size and growth of national income.

English

ENGL 101. ENGLISH COMPOSITION I. Class 3, cr. 3.

Purpose: to develop competence in written expression through directed practice in writing. Emphasis on mechanics and organization.

ENGL 202. ENGLISH COMPOSITION II.

The second half of the basic composition course. Emphasis on forms of logical discourse.

Industrial Engineering

IE 366. ELEMENTS OF PRODUCTION MANAGEMENT. Class 3, cr. 3.

Introductory course in production management, with emphasis on plant layout, work methods and measurement, production planning and control, materials handling, and cost and quality control.

Art and Design

A&D 375. SCULPTURE. Class 1, Lab. 5, cr. 3. Must be preceded by A&D 103.

An introduction to basic techniques of modeling and carving in relief and in the round.

Home Economics

F&N 303. ESSENTIALS OF NUTRITION. Class 3, cr. 3. For students not majoring in home economics.

Selection of foods to meet nutritional needs.

Mathematics

M 10. INDUSTRIAL MATHEMATICS I. Class 4, cert. units 4.

Basic procedures in computation, elementary algebra, geometry of mensuration with applications.

M 20. INDUSTRIAL MATHEMATICS II. Class 4, cert. units 4. Must be preceded by MA 10 or equivalent.

Fundamentals of algebra with applications.

M 30. INDUSTRIAL MATHEMATICS III. Class 4, cert. units 4. Must be preceded by MA 20 or equivalent.

Fundamentals concepts and techniques of trigonometry and use in the solution of industrial problems.

MA 111. ALGEBRA. Class 3, cr. 3.

MA 112. TRIGONOMETRY. Class 3, cr. 3. Should be preceded by MA 111.

MA 151. ELEMENTARY MATHEMATICS FOR ENGINEERING AND THE PHYSICAL SCIENCES. Class 5, cr. 5.

College algebra and trigonometry for students with inadequate preparation for MA 161. Does not carry credit toward graduation in the Schools of Engineering.

MA 223. INTRODUCTORY ANALYSIS I. Class 3, cr. 3. Must be preceded by MA 151 or equivalent.

Elementary properties of algebraic systems; the real number system; analytic geometry; differential and integral calculus of one variable.

MA 224. INTRODUCTORY ANALYSIS II. Class 3, cr. 3. Must be preceded by MA 223.

Partial derivatives; calculus of finite differences; differentials; multiple integrals; introduction to difference and differential equations.

STAT 351. ELEMENTARY STATISTICS. Class 3, cr. 3. Must be preceded by MA 111 and 112 or 121 and 122 or equivalent.

An introductory and preparatory course for both mathematical and applied statistics. Emphasis on underlying concepts and logic of statistical methods as well as on computational techniques.

STAT 352. ELEMENTARY STATISTICS. Class 3, cr. 3.

Continuation of STAT 351.

Pharmacy

PCOL 201. PHARMACOLOGY FOR NURSES. Class 3, cr. 3.

An introduction to the pharmacological basis of therapeutics. Included are the study of the prescription, weights and measures, nomenclature, posology, dosage forms, therapeutic classifications and modes of administration. Factors which modify drug action will be discussed as well as contraindications and drug reactions and their treatment. The relationship of the various members of the health team and their duties will be discussed.

Physical Education

PEW 100. PHYSICAL EDUCATION. Lab. 3, cr. 1.

A wide range of activities at varying levels of ability designed to develop recreational skills and interests and to contribute to the maintenance of physical well-being. Required of freshman and sophomore women for four semesters.

Physics

PHYS 205. OUTLINE OF PHYSICS. Class 3, Lab. 2, cr. 4. Must be preceded by MA 111 or equivalent.

PHYS 220. GENERAL PHYSICS. Class 3, Lab. 2, cr. 4. Must be preceded by MA 111 and 112, or 121 and 122, or 101.

Mechanics, heat, and sound for students not specializing in physics.

PHYS 221. GENERAL PHYSICS. Class 3, Lab. 2, cr. 4. Must be preceded by PHYS 220.

Electricity, light, and modern physics for students not specializing in physics.

Psychology

PSY 120. ELEMENTARY PSYCHOLOGY. Class 3, cr. 3.

Introduction to the fundamental principles of psychology, covering particularly the topics of personality, intelligence, emotion, attention, perception, learning, memory, and thinking.

PSY 370. PSYCHOLOGY IN BUSINESS AND INDUSTRY. Class 3, cr. 3.

Applications of principles of behavior to human problems in business and industry, with emphasis upon leadership, employee motivation, communications, selection and training, and job environment.

Sociology

SOC 100. INTRODUCTORY SOCIOLOGY. Class 3, cr. 3.

A survey course designed to introduce the student to the science of human society. Fundamental concepts, description, and analysis of society, culture, the socialization process, social institutions, and social change. A first course for sociology majors and a possible terminal course for nonmajors.

Speech

SPE 114. PRINCIPLES OF SPEECH. Class 3, cr. 3.

Technical and Applied Arts

TAA 115. GENERAL METALS. Class 1, Lab. 4, cr. 2.

The study of common metals and alloys, their characteristics, working properties and applications. Laboratory experience involving basic fabricating and finishing processes.

TAA 201. PRODUCT-PROCESS RELATIONSHIPS IN MANUFACTURING. Class 1, Lab. 3, cr. 2.

The development of fundamental concepts that enable the student to associate manufactured products with materials and processes. Laboratory experience in the performance and graphical representation of fabricating techniques involving metals, plastics, and woods.

TAA 324. OFFSET LITHOGRAPHY. Lab. 6, cr. 2.

Fundamentals of lithography, including copy preparation, process camera operation, plate making and operation of small offset presses.

UNIVERSITY EXTENSION COUNCIL

1963-1964

Ex-Officio

C. H. Lawshe, Ph.D.	Dean of University Extension
D. A. Scott, Ph.D.	Associate Dean of University Extension
K. M. Michels, Ph.D.	Assistant Dean of University Extension
R. L. Ewigleben, Ed.D.	Director of Ft. Wayne Center
E. L. Butz, Ph.D.	Dean of Agriculture
H. G. Diesslin, Ph.D.	Associate Dean of Agriculture and Director of Cooperative Extension Service
L. O. Nelson, Ph.D.	Director of Conferences and Continuation Services
F. K. Burrin, Ph.D.	Director of Summer Sessions and Evening Classes

Appointed by the President, for One Year

D. B. Doner, Ph.D.	Associate Dean of the School of Humanities, Social Science, and Education
R. J. Grosh, Ph.D.	Head of the School of Mechanical Engineering
W. E. Martin, Ph.D.	Head of the Department of Child Development and Family Life
A. M. Rempel, Ph.D.	Acting Head of the Department of Education
M. M. Snodgrass, Ph.D.	Associate Professor of Agricultural Economics
H. H. Young, M.S.I.Eng.	Professor of Industrial Engineering

Appointed by the President, for Two Years

Russell Cosper, Ph.D.	Head of the Department of English
W. O. Forster, Ph.D.	Head of the Department of History, Government and Philosophy
Felix Haas, Ph.D.	Dean of the School of Science
H. C. Rountree, B.S.I.E.	Head of Department of Engineering Technology
E. C. Stevenson, Ph.D.	Head of Department of Horticulture
D. H. Walther, Ph.D.	Head of Department of Modern Languages

Appointed by the President, for Three Years

Ralph G. Beelke, Ph.D.	Head of the Department of Art and Design
Mary Fuqua, Ph.D.	Head of the Department of Foods and Nutrition
William H. Hayt, Jr., Ph.D.	Head of the School of Electrical Engineering
J. L. Krider, Ph.D.	Head of Department of Animal Sciences
E. Wm. Noland, Ph.D.	Head of the Department of Sociology
Max D. Steer, Ph.D.	Head of Department of Audiology and Speech Sciences

INSTRUCTIONAL ORGANIZATION

Under the terms of the Purdue University Code, faculty authority for the control of all applied technology courses and curricula is vested in the University Extension Council. The members of this Council, consisting of 8 ex-officio members and 18 appointed by the President of the University, are listed on the preceding page.

The business of the University Extension Council is conducted at eight scheduled meetings each year. Most proposals involving academic matters flow to the council through committees appointed annually by the Dean of University Extension. Listed below are the 1963-1964 committees that are concerned with curricular and instructional matters in the applied technology curricula.

Conference Advisory Committee

L. O. Nelson, *Chairman;* Ralph Beelke, H. C. Diesslin, J. W. Ditamore, R. J. Grosh, J. C. Smalley, E. C. Stevenson, D. H. Walther.

Radio Broadcasting Advisory Committee

John R. DeCamp, *Chairman;* H. Allen, F. K. Burrin, L. T. Cargnino, E. W. Noland, A. M. Rempel, L. H. Smith, M. D. Steer.

Correspondence Study Advisory Committee

M. M. McClure, *Chairman;* Russell Cosper, J. L. Krider.

Committee on Economic Education for Teachers and Clergy

Olin W. Davis, *Chairman;* I. Morrissett, *Secretary;* Paul Alexander, R. L. Kohls, L. Senesh.

Committee on Applied Technology Admissions and Standards

M. M. Snodgrass, *Chairman;* D. B. Doner, W. O. Forster, J. R. Maris, E. W. Noland, N. M. Parkhurst, H. W. White.

Committee on Aviation Technology Curricula

J. R. Maris, *Chairman;* W. P. Duncan, *Secretary;* E. R. Blatchley, C. F. Holleman, J. A. Marchand, Jill McCormick, I. E. Treager, Vorbeck.

Committee on Nursing Curricula

W. E. Martin, *Chairman;* G. W. McNelly, *Secretary;* Isabelle Diehl, Mary Fuqua, Helen Johnson, Mary Maginsky, Eoto Stokes, Patricia Walker.

Committee on Engineering Technology Curricula

G. W. McNelly, *Chairman;* H. C. Rountree, *Secretary;* R. R. Fryer, F. Haas, W. H. Hayt, C. R. Hutton, K. M. Michels, G. L. Rainey, L. W. Smith, H. W. Stoelk, D. G. Wilson, H. H. Young.

All proposals flow to the Engineering Technology Curricula Committee from one of the following Sub-Committees:

Subcommittee on Architectural Engineering Technology

C. R. Hutton, *Chairman;* G. W. McNelly, *Secretary;* G. Florin, H. C. Rountree, L. W. Smith.

Subcommittee on Chemical and Metallurgical Engineering Technology

R. R. Fryer, *Chairman;* G. W. McNelly, *Secretary;* R. E. Grace, W. N. Lambert, H. C. Rountree, H. L. Taylor.

Subcommittee on Civil Engineering Technology

L. W. Smith, *Chairman;* G. W. McNelly, *Secretary;* R. J. Beck, R. W. Crooks, G. Florin, H. C. Rountree.

Subcommittee on Electrical Engineering Technology

G. L. Rainey, *Chairman;* G. W. McNelly, *Secretary;* R. L. Anderson, F. R. Gideon, H. C. Rountree, H. L. Wisner.

Subcommittee on Industrial Engineering Technology

D. G. Wilson, *Chairman;* G. W. McNelly, *Secretary;* J. F. Jenks, J. R. Malone, H. C. Rountree, H. H. Young.

Subcommittee on Mechanical Engineering Technology

H. W. Stoelk, *Chairman;* G. W. McNelly, *Secretary;* H. G. Laughlin, F. R. Lisarelli, H. C. Rountree, J. Tryon, C. H. Zacher.

APPLIED TECHNOLOGY INSTRUCTIONAL STAFF

FORT WAYNE

Purdue University Campus

ROY L. BROKAW (1957)..........Lecturer in Mechanical Engineering Technology
B.S., Bradley, 1949.

TERRY P. CLARKE (1961)........Lecturer in Industrial Engineering Technology
B.A., Michigan, 1930.

PAUL B. COX (1946)....Associate Professor of Engineering Technology
B.S.E.E., Purdue, 1925; M.S.Eng., 1950 (P.E., Indiana).

FRED R. GIDEON (1959)...Assistant Professor of Electrical Engineering Technology
A.B., Indiana, 1943.

GEORGE E. HICKS (1949).........Lecturer in Engineering Technology
B.S.M.E., Kentucky, 1927.

COLLINS E. MANNAN (1961).....Lecturer in Engineering Technology
(P.E., Indiana.)

D. DORSEY MOSS (1961)...Assistant Professor Engineering Technology
B.S.C.E., Purdue, 1949; M.S., Illinois, 1960; (P.E., Indiana).

LYSTON P. PERSING (1949)......Lecturer in Industrial Engineering Technology

CONWELL J. POLING (1942)........Assistant Professor of General Studies
A.B., Ohio Northern, 1923; M.A., Ohio State, 1930.

WILLIAM G. RAMMEL (1951)....Lecturer in Architectural Engineering Technology

WILLIAM V. RAMMEL, JR. (1956)...Lecturer in Architectural Engineering Technology
B.Arch., Notre Dame, 1949.

CHARLES E. ROBINSON (1963)...Lecturer in Architectural Engineering Technology
B.Arch., Miami, 1951.

JOHN F. ROSENCRANS (1959)..... Assistant Professor of Engineering Technology
B.S.M.E., Iowa State, 1942.

LLOYD W. SMITH (1948)...Assistant Professor of Engineering Technology
B.S.C.E., Purdue, 1940; (P.E., Indiana).

GIDEON A. STATZ (1955).........Lecturer in Physical Sciences

ROY L. STUART (1951)...........Lecturer in General Studies
B.S.Ed., Indiana, 1934.

JOHN TRYON (1963) ... Assistant Professor of Engineering Technology
B.S.M.E., Purdue, 1939.

DALE G. WILSON (1955)............Assistant Professor of Engineering Technology
B.S.M.E., Iowa State, 1929; M.S., Purdue, 1959; (P.E., Indiana, Michigan).

HAMMOND

Purdue Calumet Campus

ADAM J. ADAMS (1953)...........Lecturer in Engineering Technology
B.S., Notre Dame, 1952.

ROBERT L. ANDERSON (1947).....Associate Professor of Engineering Technology
B.S., Rose Polytechnic, 1942.

ROBERT ARMSTRONG (1960)....Lecturer in Architectural Engineering Technology
B.Arch., Illinois, 1958.

DONALD BALLARD (1961).......Lecturer in Engineering Technology
B.S., Missouri School of Mines, 1957; M.S., Missouri, 1961.

GEORGE BARNES (1962)..........Lecturer in Engineering Technology
B.S., Virginia Polytechnic Institute, 1952.

EMIL B. BARNEY (1959).........Lecturer in Architectural Engineering Technology
B.S.Ed., Ball State, 1950.

JOSEPH BELOVICH (1960)........Lecturer in Engineering Technology and Physical Sciences
B.S., Purdue, 1958.

JACK BELSHAW (1958) ....Lecturer in Engineering Technology
B.S., Purdue, 1958.

CARLETON BERGSTEDT (1956)..Lecturer in Engineering Technology
B.S.E.E., Illinois, 1954.

EUGENE BOROVIAK (1956).......Lecturer in Electrical Engineering Technology
B.S., Purdue, 1939.

RUSSELL A. BOWSER (1955)........Assistant Professor of General Studies
B.S., Pennsylvania State Teachers (Lock Haven), 1928; L.L.B., Valparaiso, 1936; M.A., Stanford, 1946; J.D., Valparaiso, 1949.

WILLIAM BRADFORD (1957) ....Lecturer in Engineering Technology
B.S., South Carolina, 1944; B.S.Ch.E., Tennessee, 1949.

GEORGE CALLANTINE (1958)....Lecturer in Architectural Engineering Technology

EARL A. CARLSON (1960)........Lecturer in Engineering Technology
B.S., Illinois, 1956.

ROBERT CLARK, JR. (1962)......Lecturer in Industrial Engineering Technology
B.A., Harvard, 1950.

DOROTHIE A. CLAYTON (1955)...Instructor in Practical Nursing
R.N., Methodist Hospital, 1926.

FRANK CONCIALDI (1956).......Lecturer in Mechanical Engineering Technology
B.S., Northern Illinois State, 1948; M.A., Colorado State, 1952.

WILBUR G. CRANE (1956).......Lecturer in Engineering Technology
B.S., Purdue, 1912.

WILLIAM DOHR (1962)..........Lecturer in Engineering Technology
B.S.E.E., Purdue, 1959.

JOHN DOUGLAS (1962)...........Lecturer in Physical Sciences
B.S., Illinois Institute of Technology, 1952.

JOAN M. DOYLE (1957).........Instructor in Practical Nursing
B.S., Purdue, 1929.

RICHARD J. ELLIS (1961)........Lecturer in Physical Sciences
B.S., Eastern Illinois, 1959.

WILLIAM ERICKSON (1962)......Lecturer in Electrical Engineering Technology

LEWIS GEIGER (1961)............Lecturer in Engineering Technology
B.S., Pennsylvania State, 1956; M.S., 1959.

ROBERT D. GIBNEY (1962).......Lecturer in Engineering Technology
B.S., Illinois Institute, 1942.

JAMES L. GOLDING (1960).......Lecturer in Engineering Technology
B.S., Purdue, 1952.

GLENN R. GRIFFITH (1962).....Lecturer in Physical Sciences
B.S., Purdue, 1946.

JOHN GRUNSTEIN (1962)........Lecturer in Industrial Engineering Technology
B.B.A., Houston, 1951; M.B.A., 1952.

KENNETH GUNDY (1962)........Lecturer in Engineering Technology
B.S.E.E., Purdue, 1955.

GEORGE N. HALKIAS (1962).....Lecturer in Engineering Technology
B.A., St. Thomas, 1955; B.S., M.S., Notre Dame, 1956.

FRANK D. HAYS (1946).............Associate Professor of General Studies
Ph.B., Niagara, 1935; A.M., 1936.

BERT E. HINDMARCH (1948)....Lecturer in Industrial Engineering Technology
B.S.A., Walton School of Commerce, 1935; B.S.B.A., Northwestern, 1946; M.B.A., Chicago, 1949.

FARMER HOUSEHOLDER, JR. (1962)....... Lecturer in Engineering Technology
B.A., Illinois College, 1960; B.S., Missouri School of Mines, 1960.

CHARLES R. HUTTON (1956).......Assistant Professor of Building Construction Technology
B.Arch., Illinois Institute, 1955; M.S., 1961.

LOUIS IACONNETTI (1958)......Lecturer in General Studies
B.A., Indiana State, 1952; M.A., 1953.

SIN-BAN JEN (1962).....Assistant Professor of Engineering Technology
B.S., National Human (China), 1943; M.S., Kansas State, 1955.

JOSEPH KAMINSKI (1954)........Lecturer in Engineering Technology
B.S., Purdue, 1950.

WILLIAM LAMBERT (1957)......Lecturer in Engineering Technology
B.S., Carnegie Institute, 1950; M.S., Illinois Institute, 1956.

MARY R. MAGINSKY (1954).........Assistant Professor of Practical Nursing
B.S., St. Xavier, 1935; B.S.N.Ed., Loyola, 1946; R.N., St. Francis School of Nursing 1946.

JOHN T. MALONE (1956)...........Assistant Professor of General Studies
A.B., Indiana, 1935; M.A., Northwestern 1940.

LAWRENCE G. MALONEY (1954)....Lecturer in Engineering Technology
B.S., Michigan College of Mines, 1952.

ERNEST MAYER (1961)...........Lecturer in Engineering Technology
Diploma, Dr. Engr., Technical Institute (Darmstadt, Germany), 1925.

CHARLES J. McALLISTER (1962)..Instructor in Architectural Engineering Technology
B.S.Arch., Illinois, 1953.

RICHARD F. McCORMICK (1962)...Assistant Professor of Engineering Technology
B.Ch.E., Ohio State, 1938; M.S., 1939.

WALTER F. METZ (1960)........Lecturer in Engineering Technology
B.S., Illinois Institute, 1950; M.S., 1957.

CHARLES L. MAYETTE (1961)....Lecturer in Physical Sciences
B.S., 1930, Minnesota; M.S., 1933.

FRANK J. MILLER (1955)........Lecturer in Engineering Technology
B.S., Purdue, 1950.

MARSHALL MINTER (1958)......Lecturer in Engineering Technology
B.S., Purdue, 1948.

MARVIN MUSTAFA (1961)........Lecturer in Industrial Engineering Technology
B.S., Purdue, 1950.

DON E. NORRIS (1952).........Lecturer in General Studies
B.S.Ed., Northwestern, 1940.

EDWARD O'CONNELL (1963).....Lecturer in Industrial Engineering Technology
B.S., Northwestern, 1955.

EUGENE F. RANCK (1956).......Lecturer in Engineering Technology
B.S., Bucknell, 1943.

JOSEPH C. RAPALSKI (1948)........Associate Professor of Engineering Technology
B.S.E.E., Purdue, 1938; M.Ed. Loyola, 1960.

WILLIAM W. REED, JR. (1959)..Instructor in Electrical Engineering Technology

CHARLES F. RHODES (1948)........Assistant Professor of Engineering Technology
B.S.E.E., Illinois Institute, 1936.

PHILIP ROBERTS (1963).........Lecturer in Mechanical Engineering Technology
B.S., Michigan College of Mining and Technology, 1958.

JOHN SELKY (1963)..............Lecturer in Physical Sciences
B.S., Wisconsin, 1959.

RALPH E. SKOOG (1962).........Lecturer in Engineering Technology
B.S.E.E., Purdue, 1958.

ROBERT SMELTER (1962)........Lecturer in Physical Sciences
B.S., Northwestern, 1953.

STEWART M. SPALDING (1960)..Lecturer in Engineering Technology
B.S., Illinois, 1934.

PHILLIP A. SPEER (1960)........Lecturer in Engineering Technology
B.S., Purdue, 1956.

KARL HASELSTEINER (1963).......Assistant Professor of Engineering Technology
Engineers Diploma, Technical University of Vienna, Austria, 1938; Master, Technical College Linz, 1963.

EDWIN L. STILLMAN (1963).......Instructor Engineering Technology
B.S.E.E., Purdue, 1958.

GORDON STONE (1956)..........Lecturer in Engineering Technology
B.S., Minnesota, 1947; M.S., Northwestern, 1950.

FRANK SUSIENKA (1956).......Instructor in Physical Sciences
Ph.B., Northland, 1951.

JEAN HARVEY TODD (1955).....Lecturer in Engineering Technology
B.S., Tri-State, 1948.

RICHARD WAGENBLAST (1962)..Lecturer in Physical Sciences
B.S., Illinois Institute, 1951.

ALFRED T. WALLACE (1960).....Lecturer in Engineering Technology
B.S., Rutgers, 1959; M.S., Wisconsin, 1960.

ROBERT WATSON (1961)........Lecturer in Industrial Engineering Technology
B.S., Illinois, 1939.

CLARENCE P. WELTY (1954) ....Lecturer in Physical Sciences
B.S., Otterbein, 1932; M.A., Ohio State, 1938.

LOWELL WHITESELL (1951)......Lecturer in Engineering Technology
B.S.E.E., 1949; M.S.E.E., 1950, Purdue.

CLARENCE H. ZACHER (1948).....Associate Professor of Engineering Technology
B.S.C.E., Illinois Institute, 1932; (P.E., Indiana; Illinois).

ROBERT ZIMMERMAN (1962) ...Lecturer in Engineering Technology
B.S.E.E., Purdue, 1942.

INDIANAPOLIS

Purdue University Campus

RICHARD J. BECK (1962)..Assistant Professor of Civil Engineering Technology
B.S., Wisconsin, 1951; M.S., Illinois, 1958.

DAVID L. BOWLES (1963) ....Lecturer in Engineering Technology
B.S., Tri-State, 1962.

STEVEN T. BRIGGS (1962).......Lecturer in General Studies
A.B., Hardin-Simmons, 1939.

THEODORE CUTSHALL (1961).....Assistant Professor of Chemistry
B.S.Ch.E., Purdue, 1949; M.S., Northwestern, 1959.

WILLIAM E. DAVIS (1959)........Lecturer in Architectural Engineering Technology
B.Arch.E., Illinois, 1948.

RICHARD E. DEVER (1956).......Lecturer in Industrial Engineering Technology
B.S., Indiana, 1950; M.B.A., 1951.

EDWIN H. ERNST (1946)...Assistant Professor of General Studies
B.S., Notre Dame, 1931; M.S., 1936.

DEAN W. FLAGG (1959)..........Lecturer in Industrial Engineering Technology
A.B., Western Michigan, 1926; M.A., Northwestern, 1938.

GOLDEN A. FLAKE (1947)..Associate Professor of Physics
B.Ed., Eastern Illinois, 1933; M.S., Northwestern, 1946.

RONALD M. FRANK (1963).......Lecturer in Civil Engineering Sciences
B.S., Purdue, 1959; M.S., 1960.

JAMES N. HAAG (1962)....Assistant Professor of Physics
B.S., Purdue, 1956; Ph.D., California, 1961.

GAIL E. HILL (1959).............Lecturer in Electrical Engineering Technology
B.S.E.E., Purdue, 1949.

WALTER E. HILLSMAN (1957) ..Lecturer in Mechanical Engineering Technology
Associate Technical Aide, Purdue, 1950.

JOHN F. JENKS (1947) ....Assistant Professor of Industrial Engineering Technology
B.S.M.E., Purdue, 1918.

JAMES P. KERN (1957)...........Lecturer in Physical Sciences
B.S.M.E., Purdue, 1950; M.S.M.E., 1951

MAURICE KLEE (1962) ... Assistant Professor of Mechanical Engineering
B.S.M.E., General Motors Institute, 1950; M.S., Kansas, 1961.

CHARLES M. MONNIER (1957) ....Associate Professor of Speech
B.S., Cornell, 1938; M.A., Johns Hopkins, 1949; Ph.D., Wisconsin, 1958.

HAN WON PAIK (1962) Instructor in Physics
B.S., Yonsie, Korea, 1956; M.S., 1958; M.S., Northwestern, 1962.

ROBERT E. PEALE (1963) ....Lecturer in Civil Engineering Sciences
B.S., Purdue, 1952; M.S., 1953.

GILBERT L. RAINEY (1953).......Asscociate Professor of Electrical Engineering Technology
B.S., Indiana State Teachers, 1951; M.S.E.E., Purdue, 1960.

KENTON O. REED (1959)........Lecturer in Industrial Engineering Technology

ROSCOE T. ROBBINS (1953)......Lecturer in Mechanical Engineering Technology

CECIL W. ROSS (1952)............Lecturer in Civil Engineering Sciences

LLOYD W. SCHOLL (1947)..........Assistant Professor of Building Construction Technology
B.S., Illinois, 1941 (P.E., Indiana, Arizona).

ARTHUR J. SCHULTZ (1946)...Instructor in Electrical Engineering Technology
A.B., Butler, 1962 (P.E., Indiana).

EVA MAE SCONCE (1961)...........Assistant Professor of Mathematics
A.B., Indiana Central, 1928; A.M., Illinois, 1931.

EDWARD D. SMITH (1963).......Lecturer in Civil Engineering Sciences
B.S.M.E., Purdue, 1955.

ROBERT A. SPRAY (1948)........Lecturer in Mechanical Engineering Technology
B.S.M.E., Purdue, 1945; J.D., Indiana, 1953 (P.E., Indiana).

HERMAN W. STOELK (1947)........Assistant Professor of Drafting and Mechanical Technology

RICHARD R. STREBE (1963).....Lecturer in Physical Sciences
B.M.E., General Motors, 1957; M.S., Purdue, 1963.

THEODORE A. THELANDER (1947)........ Associate Professor of History and Government
B.A., Wisconsin, 1936; M.A., 1938; Ph.D., 1940.

JAMES N. UPDIKE (1963).........Lecturer in Industrial Engineering Technology
B.S., Indiana, 1954.

JAMES R. WARK (1961).....Lecturer in Civil Engineering Technology
B.S.E.E., Purdue, 1948.

HOWARD L. WISNER (1946)........Associate Professor of Electrical Engineering Technology
A. B., Indiana, 1932; M.S., 1939.

MICHIGAN CITY

Purdue University Barker Memorial Center

RAYMOND M. BOBILLO (1962)...Lecturer in Industrial Engineering Technology
B.S., Ball State, 1950.

ELLIOTT C. HUTTON (1961) ...Lecturer in Mechanical Engineering Technology
B.S., Iowa State Teachers, 1936; M.S., Oregon State, 1939.

ROBERT E. JOHNSON (1960).....Lecturer in Architectural Engineering Technology
B.Arch., Michigan, 1951.

FREDERICK R. LISARELLI (1946)........... Assistant Professor of Drafting and Mechanical Engineering Technology
B.S., Alabama, 1938; M.A., Columbia, 1946.

THOMAS R. NUNN (1946)......... Associate Professor of General Studies
A.B., Central Michigan, 1935; M.S., Michigan, 1940.

JAMES H. REED (1957)...........Lecturer in Industrial Engineering Technology
B.S., Eastern Illinois State, 1950; M.S., Wisconsin, 1951.

LAWRENCE T. TANBER (1952)..Lecturer in Mechanical Engineering Technology

MELVIN J. YODER (1963)........Lecturer in Industrial Engineering Technology
A.B., Bluffton, 1941.

LAFAYETTE

Purdue University Airport
Aviation Technology

ERNEST R. BLATCHLEY (1956).....Assistant Professor of Aviation Technology
B.S., Illinois, 1953; M.S.Ed., Purdue, 1961; (A. & P. Certificate; Inspection Authorization; FAA Mechanic Examiner).

JERRY COLLINS (1963) Lecturer in Aviation Electronics Technology
B.S., Vanderbilt, 1962.

WILLIAM P. DUNCAN (1957).......Assistant Professor of Aviation Technology
B.S.Ind.Ed., Illinois, 1957; M.S.Ed., Purdue, 1960; (A. & P. Certificate).

LEONARD J. HAUBL (1960) .....Instructor in Aviation Technology
B.S., Lewis, 1957; (A. & P. Certificate; FAA Ground Instructor).

CHARLES HOLLEMAN (1960)...Instructor in Aviation Technology
B.S., Auburn, 1958; (Commercial Pilot; Flight Instructor, FAA Ground Instructor).

DAVID E. KEMP (1960).........Instructor in Aviation Technology
B.S., Kent State, 1959; (A. & P. Certificate; FAA Ground Instructor).

GARY W. KITELEY (1962)...Flight Instructor in Aviation Technology
B.S.Ind.Ed., Minnesota, 1962; (A. & P. Certificate; Commercial Pilot; FAA Flight Instructor).

JACK A. MARCHAND (1962)....Instructor in Aviation Technology
B.S.A.E., Purdue, 1956; (A. & P. Certificate).

JAMES R. MARIS (1955)........Head of the Department of Aviation Technology; Associate Professor of Aviation Technology
B.S., Illinois, 1955; (A. & P. Certificate; FAA Ground Instructor Certificate).

JILL S. McCORMICK (1955).....Instructor in Aviation Technology
(FAA Ground Instructor Certificate, Flight Instructor and Link Trainer Instructor Certificates)

CLYDE T. NEHER (1963)..Flight Instructor in Aviation Technology
(Commercial Pilot, FAA Flight Instructor)

ALBERT TOTH (1958).....Assistant Professor of Aviation Technology
B.S., Florida Southern, 1949; M.S.Ed., Florida State, 1960; (A. & P. Certificate; FAA Ground Instructor Certificate).

JOHN EDWARD TOWNSEND (1962)........ Instructor in Aviation Technology
A.B., Bob Jones, 1954; M.A., 1955; (Commercial Pilot, FAA Flight Instructor, FAA Ground Instructor).

IRWIN E. TREAGER (1956).........Assistant Professor of Aviation Technology
B.S., Illinois, 1953; M.S.Ed., Purdue, 1961; (A. & P. Certificate; FAA Ground Instructor Certificate).

JOSEPH F. VORBECK (1964).....Supervisor of the General Aviation Section
B.S., Cornell, 1959; (Commercial Pilot; S. & M.E.L.; Flight Instructor, Instrument; Ground Instructor, all ratings; Parachute Rigger).

ARNOLD K. WILSON (1961).....Instructor in Aviation Technology
B.S., Illinois, 1958; (A. & P. Certificate; FAA Ground Instructor Certificate).

LAFAYETTE

Nursing

HELEN R. JOHNSON (1962)........Associate Professor of Nursing
G.N., Indiana University School of Nursing, 1936; R.N., 1936; B.S.N., Indiana, 1949, M.S.Ed., Butler, 1953.

EOTO R. STOKES (1963)...Assistant Professor of Nursing
A.B., Transylvania, 1944; B.S.N., Vanderbilt, 1947; M.S.N.Ed., Indiana, 1959 (R.N., Tennessee; Indiana).

SHARON L. TIMMINS (1963)......Instructor in Nursing
B.S.N., Michigan, 1959 (R.N., Michigan; Indiana).

PATRICIA A. WALKER (1963)......Assistant Professor of Nursing
G.N., St. Vincent School of Nursing (Indianapolis), 1952; B.S.N., St. Louis, 1956; M.S.N.Ed., Indiana, 1961 (R.N., Missouri; Indiana; Wisconsin; Colorado).

Department of Industrial Education

HARRY S. BELMAN (1947)..... Head of the Department of Industrial Education; Professor of Industrial Education
B.A., Wisconsin, 1923; M.A., 1933.

GEORGE H. BUSH*........Associate Professor of Industrial Education
B.S.E.E., Kansas State, 1922; M.S.Ed., Indiana, 1937 (P. E., Indiana).

JOSEPH J. CARREL (1962)..Assistant Professor of Industrial Education
BS., Indiana State, 1952; M.S., 1953.

ALFRED S. DREW (1958) . Assistant Professor of Industrial Education
B.S., Wisconsin State, 1943; M.Ed., Marquette, 1952; Ph.D., Wisconsin, 1962.

MAX EDDY (1956).......Associate Professor of Industrial Education
B.S.Ed., Central Missouri State, 1948; M.S.Ed., Missouri, 1953; Ed.D., 1956.

LAWRENCE F. GREENBERGER (1961)...... Professor of Industrial Education
A.B., Pittsburgh, 1931; M.Ed., 1934; Ph.D., 1936.

CLARENCE E. HIGHLEN (1948)....Professor Emeritus of Industrial Education
B.Ed., Colorado State A & M., 1938; M.Ed., 1948.

WILLARD B. HILL (1942)..Associate Professor of Industrial Education
B.S., Indiana State Teachers, 1923.

DANIEL L. HOUSEHOLDER (1963)........ Assistant Professor of Industrial Education
B.S.Ed., Eastern Illinois, 1954; M.S.Ed., 1957; Ed.D., Illinois, 1963.

THOMAS F. HULL (1956).......Instructor in Industrial Education
B.S.T.&I.E., Purdue, 1951; M.S., 1957.

HARVEY G. McCOMB (1925)........Professor Emeritus of Industrial Education
Ph.B., Chicago, 1918.

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* On leave of absence 1963-1964.

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